

Responses to the Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities

On December 1, 2021, the U.S. Department of Energy (DOE) issued a *Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities* in the Federal Register (86 FR 68244). Responses to the RFI, which are included in their entirety in this document, will inform development of a consent-based siting process, the overall strategy for an integrated waste management system, and possibly a funding opportunity for interested groups.

The comment period for the RFI remained open for 90 days and closed on March 4th, 2022. During the comment period and subsequent days, DOE received 225 submissions in response to the RFI.¹ The RFI sought feedback from the public on:

- The consent-based siting process itself,
- Ideas for removing barriers for meaningful participation, especially for groups and communities who have not historically been well-represented in conversations, and
- Views on the role of interim storage as part of the nation's waste management system.

This document provides a compilation of the unedited RFI responses with individual submissions arranged in alphabetical order according to the last name of the first signatory of each response. Note that in some cases, the individual that submitted the response was not the same as the individual(s) that prepared or signed the response. If you have Adobe, you can use the "Bookmarks" pane to navigate directly to specific submissions. In addition, you can also refer to the Table of Contents and use the page numbers in the bottom-left of each page to locate submissions from specific organizations or individuals.

DOE is also performing a detailed evaluation of the comments. We will issue a full report of our findings in the coming months. This upcoming report will also discuss how DOE is using (or intends to use) public feedback from the RFI and other outreach efforts to help inform development of a consent-based siting process, our strategy for an integrated waste management system, and consideration of a funding opportunity for interested groups and communities.

Consent-based siting must be done in close collaboration with the public, interested groups, and governments at the Tribal, state, and local levels. This RFI is just one step in that direction. We recognize the importance of listening to and receiving comments from a wide range of perspectives and we will be creating additional opportunities for the public to engage and share information with us in the coming weeks and months.

Thank you!

The Consent-Based Siting Team
March 2022

¹ As described in the FR notice, correspondence received outside the comment period was considered and reviewed subject to schedule limitations.

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From: Alan Ahn

Sent: Friday, March 4, 2022 1:58 PM

To: Consent Based Siting

CC: Cindy Vestergaard; Lindsey Walter; Ryan Norman; Stephen Burns

Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage - Response from Third Way

Attachments: Third Way Response - DOE RFI on Consent-Based Siting and Federal Interim Storage, Docked ID DOE-HQ-2021-0032.pdf

To Whom It May Concern:

Third Way is pleased to submit the attached response to the U.S. Department of Energy's Request for Information (RFI): Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities (Docket Number DOE-HQ-2021-0032).

We greatly appreciate this opportunity to respond to this RFI and support the DOE's important efforts to address our country's nuclear waste challenges. Please do not hesitate to contact us if you have any questions or require clarification on any specific issue.

Sincerely,
Alan Ahn

Alan Ahn

Senior Resident Fellow for the Climate and Energy Program | Third Way



Organization: [Third Way](#)

Contact Names:

- Alan Ahn (Senior Resident Fellow, Climate and Energy Program) - [REDACTED]
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- Response Contributors:
 - Cindy Vestergaard (Senior Visiting Fellow, Climate and Energy Program) -
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 - Stephen Burns (Senior Visiting Fellow, Climate and Energy Program) -
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 - Lindsey Walter (Deputy Director, Climate and Energy Program) -
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 - Ryan Norman (Policy Advisor, Climate and Energy Program) -
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Third Way Response to the Department of Energy Request for Information: Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities

Area 1: Consent-Based Siting Process

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Although it can be argued that community-level engagement should be the central focus for a consent-based approach to siting nuclear waste storage and disposal facilities, it is also vital that the appropriate and/or overlapping tribal or state governments are also involved in the dialogue from an early stage and that tribal- and state-level engagement is conducted in parallel with outreach to potential host communities. At the very minimum, any relevant tribal or state jurisdictions—to the extent possible—should be informed of dialogue occurring between the Department and municipal, community, and local governments.

While acknowledging the importance of engaging with actors and stakeholders beyond the local community, it can be argued that the same degree or level of consent required from that of a host community may not be necessary vis-à-vis a state or tribal government. Mere absence of opposition from such governments may be sufficient, as opposed to securing active endorsement of siting projects. For example, the New Mexico government never issued a formal approval of the Waste Isolation Pilot Plant (WIPP), but simply relented on its opposition to the facility once certain conditions and concerns (i.e., agreement on bypass roads) were addressed.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

There are a number of measures that the Department can undertake to encourage local, state, and tribal governments to engage with the federal government on the siting of interim storage facilities. For example, offers of financial compensation to stakeholders may be considered a possible incentive for communities, states, and tribes to engage with DOE and consider hosting interim storage sites for spent nuclear fuel (SNF). Beyond simple cash transfers or awards, grants or other financial assistance may also be offered to candidate communities to hire consultants, produce studies, and other preparatory work to facilitate fair and informed decisions on siting proposals—this would be particularly important for historically disadvantaged communities and communities with relatively little familiarity with the civil nuclear sector and nuclear energy technologies.

The Department may also consider highlighting the economic and employment benefits arising from the storage/disposal facilities themselves. The [Blue Ribbon Commission \(BRC\) Report to the Energy Secretary in 2012](#) provided extensive **details on Sweden’s process to site a geological repository for spent fuel**. Of the two final candidate repository sites, Forsmark and Oskarshamn, **it was actually arranged that the “losing” community would receive a significantly larger financial compensation package**. As stated in the BRC report, the rationale behind this **arrangement was “that the community selected to host the repository would realize additional economic benefits, in the form of construction activity, infrastructure investments, permanent jobs to operate the repository, and ancillary development (e.g., research and fabrication facilities, etc.).”¹ It was estimated that the repository’s economic benefits for the local economy would be worth approximately \$300 million.² Communicating the local economic benefits of spent fuel storage facilities may incentivize prospective host communities to engage with the Department in both initial and subsequent conversations about interim storage siting.**

The Department also clearly recognizes the potential of co-locating clean energy, industrial, research & development (R&D), and other infrastructure with interim storage facilities as a potential incentive for host candidates. Co-location as a means of encouraging or incentivizing consent presents the following possible advantages:

- Durability of benefits to the host community: The economic impacts of additional job-creating infrastructure and revenue-generating facilities will generally be longer-lasting than a financial transaction or simple cash transfer. Such local economic benefits would also persist even after spent fuel is moved offsite to a permanent disposal location.
- Additional economic and employment benefits: An interim storage facility in itself would create jobs and investment through construction activity, facility operation, etc. Co-locating clean energy and other infrastructure with an interim storage facility would obviously provide additional benefits in terms of more jobs, investment, and economic activity for the local community.
- Potential for amplification and diffusion of benefits: The establishment of a sizable industrial hub or R&D complex around an interim storage site could potentially result in

¹ Blue Ribbon Commission on America’s Nuclear Future, “Report to the Secretary of Energy,” January 2012, p. 50, https://www.energy.gov/sites/prod/files/2013/04/f0/brc_finalreport_jan2012.pdf.

² Ibid.

economic and employment benefits that reverberate beyond the immediate community or municipality. In this way, co-location or similar arrangements that result in broader economic vitalization could also be helpful in fostering approval or consent from other stakeholders such as tribal and state governments, regional entities and organizations, etc.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

As acknowledged, the presence of intervening jurisdictions, including tribal and state governments, can serve as additional sources of objection or opposition to the siting of an interim storage facility, even in the event of agreement on a site between the federal government and host community. Therefore, as already stated, it is vital that the Department also proactively engage and communicate with these stakeholders in a meaningful and timely manner. As the Department develops its strategy on how to address and manage such challenges, it would be prudent to pay closer attention to international models and precedents with similar political structures—**Canada’s federal** system is analogous to that of the United States, whereas Sweden and Finland are both unitary states and thus, present cases that are less applicable in this regard.

Further, it would also be prudent for the Department to, at the minimum, establish a framework or set of guideposts with respect to defining consent. Practically, it would be impossible to expect all individuals within a community or relevant jurisdiction to uniformly agree on the pertinent issues and conditions. In this endeavor, the Department must seek to strike a fine balance between: (1) setting clear ground rules for communities and other stakeholders in advance of any engagement efforts so there are no surprises as the process moves forward, and (2) allowing for sufficient flexibility to adapt to local or regional preferences and considerations that permit case-by-case evaluations and decisions as necessary.

Arguably, the most significant challenges to the successful siting of federal interim storage facilities using a consent-based process are:

1. Complications related to proceeding with interim storage without an established arrangement for permanent disposal: Communities may be reluctant to host interim storage sites if there are worries that they become de facto permanent sites for spent fuel; such concerns are more likely without a permanent solution in place. Moreover, there are complicating legal issues as well—the Nuclear Waste Policy Act, as presently interpreted, would permit DOE to proceed with a consent-based siting program, negotiate with communities, and initiate licensing processes for interim storage facilities. However, without a permanent repository or disposal solution, the Department would not be allowed to legally operate such facilities.
2. **DOE’s lack of capacity, expertise, and historical success in conducting public outreach**: **Experts have remarked upon the Department’s inability and lack of capacity** with respect to public engagement and outreach—in other words, such work and activities lie outside

the Department’s “comfort zone.” Given the history of the United States’ nuclear waste management efforts and the agency’s central role in these undertakings, the Department would now be embarking upon a consent-based siting program with a “trust deficit” vis-à-vis the public.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

The Department could consider partnering with the following entities in its efforts to develop a consent-based approach to interim storage facility siting:

- Tribal organizations, including senior and youth organizations
- Local industry/business associations
- Utilities and the nuclear industry (holders of SNF)
 - This could include the advanced reactor community and developers of innovative civil nuclear technologies
- Non-nuclear clean energy companies and developers
- Youth and senior organizations in volunteer communities
- Local and state-level political leaders
- Labor unions

This is not an exhaustive list, but may serve as a starting point as the Department considers and evaluates potential partners in the implementation of its consent-based siting program.

7. What other issues, including those raised in the [2017 Draft Consent-Based Siting Process](#) should the Department consider in implementing a consent-based siting process?

It is advisable that the Department employ a volunteer approach to consent-based siting, where communities volunteer to learn more about the general process. In this regard, the Canadian **Nuclear Waste Management Organization’s (NWMO’s)** [Adaptive Phased Management \(APM\)](#) approach to siting its spent fuel repository may serve as a helpful model for DOE. The site selection process began in 2010 with 22 municipalities and Indigenous communities expressing interest in learning more and exploring their potential to host the project. Today, two potential host communities are engaged with NWMO, the Municipality of South Bruce in southern Ontario and the Township of Ignace in northwestern Ontario.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

The following are a number of notable barriers that may prevent meaningful participation in a consent-based siting process:

- Transportation issues: This is an area ripe for public outreach. The regulatory structure is in place and the safety of the canister and transport is solid. DOE transportation links may raise more issues given it involves more than SNF, but transportation to/from an interim storage will move nuclear material through many jurisdictions (tribal lands, etc.) that will involve state governments (likely multiple).
- Utilities may be a barrier: Contracts negotiated with DOE today no longer include a date for DOE to take back SNF. Utilities are therefore responsible for storing SNF indefinitely which creates a liability for the fuel which may create incentive for some utilities to support an interim storage facility, final repository, and/or a closed fuel cycle. In the case of Exelon (now called Constellation) the motivation for supporting an interim storage, let alone final repository, is challenged by the over \$1bn in fees that are deferred until DOE can take back the SNF. The position of utilities on centralized interim storage will be a factor to consider.
- Lack of public trust in the DOE (and/or government bodies as a whole): The general lack of trust between the public and DOE can be a complication/barrier to meaningful consent-based siting. Many countries with national SNF policies (such as Finland, Sweden, Canada) have moved away from government-led implementation and require industry to implement national SNF management and disposal obligations. In turn, industries in these countries have established independent, non-profit, nuclear utility-run entities to propose and implement the long-term, safe management of radioactive waste and its geological disposal. These entities collaborate with communities throughout the repository life cycle, from siting and construction to operation and eventually, closure. The DOE may be the place to start from, but over time, success of consent-based siting for interim or permanent storage of HLW and SNF will require industry and communities to engage (and agree). Industry and local (and State-level) **interactions have to be nurtured and maintained throughout the facility's entire life span**, from siting to closure.
- Confidence in the "interim" designation: For informed consent to be successful, communities must have confidence that these sites are in fact **"interim."** The linkages in the Nuclear Waste Policy Act (NWPA) between interim storage milestones and repository milestones were intended to provide confidence that both would proceed in parallel, and that storage would not become permanent by default. Under the NWPA, the DOE generally could not accept SNF in private or government-administered interim storage without a permanent repository being further along. The NWPA was also put in place at a time when it was expected that Yucca Mountain would be the **nation's sole** repository. With Yucca no longer achievable but legislation still deeming it so, communities will not have confidence that Federal Interim Storage Facilities are temporary measures towards an end goal. To provide regulatory certainty and informed consent, there must be movement at the legislative/regulatory level on geological disposal alongside interim storage.
- *Regulatory standards established under 10 CFR Part 60, 40 CFR Part 191, and 10 CFR 63 are outdated.*

- *Updated federal legislation should require state approval of an interim storage facility (legislation to support it) before the NRC can issue a license.* Without state approval, the NRC will continue to spend time and resources on reviewing license applications that have no chance to go forward.
- It is not reasonable for a municipality to commit themselves to a repository, or even site characterizations, without active support from the authorities (municipal, country, state and federal). For example, the Private Fuel Storage ISFSI had support from the local tribe on whose land it was to be located, but was opposed by the state of Utah and was denied permits related to siting and transport corridors by the Department of the Interior.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

Here are a number of considerations for the Department related to ensuring resources for potentially interested communities so they can have adequate opportunities for information sharing and expert assistance so they can make informed decisions while participating in the consent-based siting process:

- It may be prudent for the Department to prioritize or first consider sites and communities with high degrees of familiarity with nuclear technology (communities around plant sites, communities with stranded spent fuel that generally oppose moving the material off site, etc.). This may help to alleviate the learning curve that would be required for communities in evaluating decisions related to consent on siting proposals.
- In Sweden, the principle of volunteerism means that potential host municipalities have to give their consent at each stage of the site selection process. In order for volunteerism to work, the municipalities must have the opportunity to closely follow, and to influence, the scientific/technical and decision process. To facilitate this, the Swedish government provides municipalities stakeholder funding.
- The Blue Ribbon Commission noted that funding for communities was of particular importance to allow communities to hire their own independent analysts to confirm information. The ability to independently verify/review the information provided is vital for communities and their consent to be valid.

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

The Department should also **engage the Nuclear Energy Tribal Working Group (NETWG), a formally chartered Departmental working group, to work with the Office of Nuclear Energy on the implementation of a consent-based siting process. Concurrently, the Department should increase the funding to NETWG, and expand the membership to incorporate more tribal nations beyond their existing roster.**

Area 3: Interim Storage as Part of a Waste Management System

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

Economic incentives will likely play a key role in efforts to secure consent from communities on interim storage siting. In the case of WIPP, consent was achieved only after long-term shifts in the local economic outlook. After a downturn in the regional potash mining industry—the predominant employer in the area—communities and local leaders gradually became more supportive of hosting the facility, even after there had been some initial community opposition to the project. Historically, local economic development and diversification have been top priorities for communities that have considered hosting nuclear waste management sites.

Given the relative importance of economic considerations in community deliberations on hosting waste facilities, co-location presents certain advantages, as previously stated: supplements increases to local jobs and economic activity arising from the waste facility itself, enhances the longevity of local economic benefits, potentially amplifies positive economic impacts so that they diffuse beyond the immediate area, etc. The Department has publicly acknowledged its recognition of the potential value and benefit of co-locating R&D facilities, clean energy demonstrations, and similar infrastructure along with an interim storage facility.

For co-location, the Department could certainly consider non-nuclear infrastructure, such as renewable energy generating assets, hydrogen production infrastructure, non-nuclear industrial and manufacturing facilities, etc. However, it would appear that a spent fuel interim storage facility would also be a suitable and appropriate site for nuclear-specific infrastructure, including:

- R&D and test facilities, such as:
 - Underground research laboratories (URLs)
 - Testbeds for safeguards verification and monitoring technologies
- Advanced nuclear pilots and demonstrations that have the potential to use material recycled or processed from SNF. A non-exhaustive list of companies that are developing such concepts include:
 - Oklo: Oklo is developing a fast spectrum micro-reactor that can use material from recycled spent fuel. The company [recently signed an agreement with Argonne National Laboratory \(ANL\) to collaborate on commercializing advanced fuel recycling technology](#).
 - Alpha Tech: This [Utah-based developer](#) is seeking to commercialize a small-scale molten salt reactor (MSR) design. It is also developing an electrochemical **process that can “convert nuclear waste into valuable products, including rare earth elements, medical isotopes, industrial isotopes, precious metals, and new fuel for advanced reactors.”**

- Zeno Power: [Zeno Power](#) is a Washington, DC-based company that is developing a radioisotope power system (RPS) technology that [generates electricity from heat-producing isotopes that can be extracted from spent fuel](#).
- Non-reactor nuclear-specific demonstrations and pilots, including [Deep Isolation's deep borehole disposal concept](#).
- Hot cells and spent fuel handling facilities: dry cask storage, while demonstrated to be quite robust, will eventually be subject to aging, corrosion, and other degradation phenomena which may necessitate: (1) study and research, and (2) repackaging spent fuel in new containers and canisters. These activities will require shielding and handling facilities that may be cost-prohibitive to deploy on every current spent fuel location in the United States, especially stranded spent fuel sites.

The potential to unleash the energy and economic value contained within spent fuel can certainly serve as an incentive for communities that recognize it. However, the means to extracting this economic value/energy potential (i.e., reprocessing) remains subject to controversy and debate, especially with regards to concerns over security/proliferation risks and economic feasibility.

Against this backdrop, it may be appropriate to highlight ongoing federally-sponsored research programs aimed at addressing some of these concerns, including the Advanced Research Project Agency-Energy's (ARPA-E's) program on [Optimizing Nuclear Waste and Advanced Reactor Disposal Systems \(ONWARDS\)](#). Interim storage facilities would have the potential to serve as testbeds for such experimental and research efforts. Should such R&D efforts bear fruit and create pathways towards unleashing the latent energy potential within spent fuel (while also fully addressing concerns related to security, proliferation, and economics), *this could in theory dramatically alter public perceptions around waste and enhance overall prospects of garnering consent from host communities in the long-term.*

Even if issues associated with reprocessing are not ultimately addressed, R&D and experimental facilities co-located with interim storage sites may nevertheless result in novel and innovative solutions for the permanent management or disposal of spent fuel. Co-located R&D infrastructure aimed specifically at developing innovative permanent solutions may allay community concerns regarding the permanence of interim storage. Technological breakthroughs and developments in this area may also activate the political momentum needed to make the appropriate amendments to the NWPA and open legal pathways towards alternative permanent solutions for spent fuel.

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

The two are indivisible. Without a viable approach for permanent disposal, community hosts **will not have confidence that federal sites are indeed “interim” and may become permanent by default.** There must be clarity on the regulatory structure for consent-based siting to be viable and informed. There must be movement on the regulatory level for both geological disposal and interim storage. Communities will not commit themselves to an interim storage facility or

repository, or even site characterizations, without active support from authorities (municipal, county, tribal, state, and federal).

A number of states have legislation that links new builds of nuclear power facilities with progress on establishing a permanent repository. California, Connecticut, Illinois, Maine, and Oregon require the identification of a demonstrable technology for a means for high level waste disposal as a condition for the construction of new nuclear power facilities. West Virginia required the same until February 8, 2022, when the Governor signed a bill eliminating the **state's ban on nuclear power plants**.

If the federal government puts forth an interim storage facility that is de-linked from a permanent repository there could be significant resistance. This may cause certain states to not only prohibit or bar the hosting of interim storage facilities, but also to new nuclear power plants, whether advanced reactor technology or LWR technology.

Updated federal legislation should also require state approval of an interim storage facility (legislation to support it) before the NRC can issue a license. Without state approval, the NRC will continue to spend time and resources on reviewing licenses that have no chance to go forward.

Thus, given current situation, the primary criterion for selecting a CISF site: the community consents or is open to being considered for a permanent disposal site, pending:

- Volunteering communities
- Geological surveys
- Technical developments (e.g., advances in borehole disposal)
- Passing through predetermined off-ramps/milestones

4. What other issues should the Department consider in developing a waste management system?

Three macro-level observations related to this RFI that Third Way would like to convey are:

1. [Consent-based siting approaches have been used successfully in other countries](#) to develop permanent solutions to the back-end of the fuel cycle. These international cases can be used as guides or models for the Department as it develops and implements its own consent-based siting strategy and program.
2. Cutting edge innovations, including in advanced reactor technologies, may increase both the prospects and durability of consent by potential host communities of spent fuel storage and disposal facilities.
3. Spent fuel and nuclear waste challenges have remained a vexing issue for decades. Nevertheless, the U.S. and the rest of the world are currently grappling with a climate crisis, and climate science strongly points to the need for expanded nuclear energy generation so that climate mitigation targets can be feasibly achieved. In light of these climate challenges, it is vital that we continue to seek decisive solutions for the back-end of the nuclear fuel cycle.

Other potential models, examples, information, and points of reference to help guide the Department in its efforts to develop and execute a consent-based siting program:

- The potential to foster secure, long-term, generational employment is typically touted as a major benefit of a nuclear power facility for a local community. While addressing concerns related to the de facto permanence of interim storage is paramount, waste management facilities generally operate for significant time periods and thus, provide a similar benefit of stable, long-term jobs. Depending on the local context and other circumstances, it may be advisable for the Department to highlight this potential benefit in its conversations with candidate host communities.
- The Department may also consider recent siting efforts for advanced reactor demonstrations as a potential model for implementation and execution of its consent-based siting program. [The decision to site the first Sodium reactor demonstration in Kemmerer, Wyoming](#) was made following an open and competitive process (with other communities also volunteering to host the site). The final selection was also made only **“following an extensive evaluation process and meetings with community members and leaders,”** according to [TerraPower](#).

From: Caleb Ward
Sent: Friday, March 4, 2022 9:41 AM
To: Consent Based Siting
CC: Bud Albright; Ed Davis [REDACTED]
Subject: [EXTERNAL] U.S. Nuclear Industry Council (USNIC) Comments on DOE-NE Consent Based Siting
Attachments: USNIC Comments Response on Consent Based Siting RFI (2022).pdf

UNITED STATES NUCLEAR INDUSTRY COUNCIL
1317 F Street NW, Washington, DC 20004
202.332.8155 www.usnic.org

March 4, 2022

By email: Consentbasedsiting@hq.doe.gov

Dr. Kim Petry
Acting Deputy Assistant Secretary for Spent Fuel and Waste Disposition
U.S. Department of Energy
1000 Independence Ave. SW
Washington, DC 20585

Subject: U.S. Nuclear Industry Council (USNIC) Comments on DOE-NE Consent Based Siting

Please see the attached comments from the U.S. Nuclear Industry Council pursuant to U.S. DOE Notice of Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities as requested in the December 1, 2021, Federal Register / Vol. 86 No. 228.

Sincerely,

Bud Albright

Bud Albright
President & CEO
U.S. Nuclear Industry Council &
U.S. Under Secretary of Energy (2006-2008)
[REDACTED]

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Use caution if this message contains attachments, links or requests for information.



United States Nuclear Industry Council
1317 F Street NW Washington, DC 20004

March 4, 2022

U.S. Nuclear Industry Council (USNIC) Comments on DOE-NE Consent Based Siting
By email: Consentbasedsiting@hq.doe.gov

RE: Responses to U.S. DOE Notice of Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, Federal Register / Vol. 86 No. 228
Wednesday, December 1, 2021

To:

Dr. Kim Petry

Acting Deputy Assistant Secretary for Spent Fuel and Waste Disposition

U.S. Department of Energy

1000 Independence Ave. SW

Washington, DC 20585

Dear Secretary Petry:

The United States Nuclear Industry Council (USNIC) is pleased to respond to the Department of Energy's request on the above-cited Federal Register Notice of Request for Information (RFI) concerning a consent-based siting process for siting federal consolidated interim storage facilities for spent nuclear fuel and high-level waste.

USNIC is the leading U.S. business consortium advocate for the U.S. advanced nuclear development companies and their supply-chain partner companies. USNIC's membership is comprised of over 80 companies doing business in the nuclear energy industry. While these views represent the consensus views of the Council, they do not represent any specific views of individual member companies and organizations.

Herein, USNIC provides some general overall comments on moving forward with consent-based siting at this time in the context of the status of the overall U.S. national nuclear waste management program. Specific responses are also provided to the three areas of interest prescribed in the request for information.

General Comments

Our views remain largely the same as they were when we provided comments to the DOE on July 29, 2016, pursuant to the DOE Invitation for Public Comment on Consent-Based Siting as published in the Federal Register Notice, Vol. 80, No 246, December 23, 2015, 79872-79874, See attached hereto.

Although we appreciate the DOE openness and willingness to undertake this latest initiative, we regret that the status of progress in consent-based siting requires that we repeat many of the same comments as we made earlier in our responses to the DOE RFI in 2016.

First and foremost, as we stated in 2016, we find that America's nuclear waste management program continues to remain at a virtual standstill. As a result, there is no credible permanent disposal pathway available for the nation's growing inventory of spent nuclear fuel and high-level waste (HLW) from both commercial and defense sources. Currently, spent nuclear fuel and HLW remain in storage at 113 sites in 39 states. U.S. commercial spent fuel inventories now exceed over 88,545 MTU with approximately 8,889 MTU stored at 20 shutdown sites.

Given this current impasse on the siting of a repository for permanent disposal, the DOE is focused on moving forward with preliminary siting activities related to interim storage facilities. But as the recent experience with private sector interim storage facilities has amply shown in New Mexico and Texas, there is today considerable public skepticism and concern that any such interim storage facilities will become de facto permanent repositories given the complete absence of a viable national repository program, as mandated under the Nuclear Waste Policy Act, as amended (NWPA).

Consequently, it is unclear how a Federally implemented program of interim storage would fair any better in terms of public acceptance and support. Accordingly, USNIC believes that the siting of any interim storage facility by DOE should proceed in parallel with a credible national repository program for the permanent disposal of spent fuel and high-level nuclear waste.

The need for a credible national repository program is underscored by the fact that the DOE in its "Report to Congress on the Demonstration of the Interim Storage of Spent Fuel from Decommissioned Nuclear Power Plants Sites", DOE/RW-0596, December 2008, stated that "The Department has reviewed its authority to accept spent nuclear fuel from decommissioned commercial sites and has concluded that it has no such currently exercisable authority (emphasis added). To our knowledge, this remains the case today. As a matter of fact, under current NRC regulations, 10CFR72.44(g)(1), construction of a MRS, the functional equivalent of a consolidated interim storage facility, may not begin until the Commission has authorized the construction of a repository under Section 114(d) of the NWPA.

Restoring trust, confidence, and credibility in the implementation of the integrated national nuclear waste program is likely to be the single most important factor in determining future success in any siting activity, including interim storage facilities.

In our view, as we stated in our 2016 response to the DOE RFI, trust and confidence comes from transparency, accountability, and compliance with existing laws and regulations. We believe that DOE's unilateral abolishment of the Office of Civilian Radioactive Waste Management (OCRWM) continues to harm the stakeholder community confidence and trust in DOE and will obviously be detrimental to DOE efforts in siting interim consolidated storage facilities.

Last year, USNIC, along with six other organizations, wrote to Secretary Granholm calling for the designation of a point contact within the Secretary's office as an interim measure to improve accountability. It is nearly axiomatic that without a single point of contact within the DOE on an issue of this level importance, the urgency with which the Department is approaching this issue is left to doubt.

Accordingly, as stated in our previous 2016 RFI comments, USNIC again urges DOE to re-establish the OCRWM as an interim step while working with Congress to establish an enduring organization and management entity that is worthy of trust and confidence by all affected stakeholders for implementing and managing the national nuclear waste management program.

Closely aligned with this action to establish a separate organization, the Nuclear Waste Fund must be restructured so that access to both the fund's annual receipts and corpus are available for expenditure by the new organization, subject to appropriate congressional oversight, but removed from annual Congressional appropriations.

As an additional step in restoring confidence in the program, we believe the NRC licensing process for the Yucca Mountain Project should be completed. By completing this process, all important safety and environmental concerns can be considered and resolved. It is wholly unfair and unreasonable to suggest that final determinations should be made regarding the completion of the Yucca Mountain Project absent a final determination by the expert agency as to the safety and reliability of the proposed facility. Moving forward immediately with completing the NRC licensing process for the Yucca Mountain is imperative in order to re-establish confidence in the regulatory process used to license permanent repositories. Notwithstanding any positive outcome and determination by the NRC, Congress would still be required to appropriate funding in order for the Yucca Mountain Project to move forward as required under the NWPA.

With these above steps taken, we believe that the national waste program once again can, and indeed must, begin moving forward.

In terms of any consent-based siting process, it is USNIC's view that ***universal*** consent of all interested stakeholders and parties is highly unlikely to ever be achieved in our society and under our existing governmental institutions, and consequently ***universal*** consent should not be the goal or requirement of any consent-based siting process. This does not mean that all interested parties should not be heard, and their views considered. We believe they should. But in this domain, the siting of nuclear waste storage and disposal facilities, as similar to the siting of other hazardous waste facilities, it is the local unit of government, or tribe of jurisdiction, where the facility is intended to be sited and the respective state government, that are the primary parties whose consent and support is vital for any long-term storage or permanent disposal facility. It is, therefore, their support that is of the utmost importance in the development of an enduring partnership with the federal government in hosting nuclear waste facilities.

Detailed Comments

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

This issue is properly a determination for potential host community stakeholders. Although the Federal Government may have ultimate preemption authority over a wide range of issues, it possesses no inherent knowledge nor appreciation for matters of this nature.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

USNIC believes that the four pillars of consent of state, local, and tribal officials rest on the assurances that: (1) any proposed nuclear waste facility will be safe and secure and will represent no unreasonable or undue potential risk from its operations, and that the facility will be built and operated in accordance with all applicable state and federal regulations; (2) appropriate local, tribal, and state officials will be kept fully informed of the status operations of the facility and its performance and compliance with applicable regulatory requirements, have the reasonably necessary resources to review and assess the performance of the facility in terms of compliance with applicable regulations, and can take meaningful action to raise concerns and have such concerns addressed in a timely way; (3) there is made available to local, tribal, and state government reasonable resources necessary to engage and carry out their respective duties to preserve and protect the health and welfare of their citizens; and (4) the federal government will provide incentives for communities and states for partnering and consenting to host this important activity.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

USNIC believes that the Federal government should be supportive of benefits and opportunities for local, State and Tribal governments that are willing to consider hosting nuclear waste management facilities and that these stakeholder communities should be encouraged by DOE to identify meaningful benefits that are of importance to their communities.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

The number one impediment to siting federal interim storage facilities is the current lack of any credible program to develop a permanent spent fuel disposal facility. See General Comments regarding statutory and regulatory requirements for a repository as a condition precedent to DOE interim storage facilities.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

Given the present circumstances, the lack of any credible repository program for permanent disposal means that the time period of storage is completely open-ended. Consequently, to maintain credibility when interacting with potential host communities, DOE must acknowledge that, absent a credible and reliable final decision regarding a permanent repository, storage of spent fuel at the consolidated storage location could

continue indefinitely. Hence, as part of any agreement with the hosting local, tribal, and state governments, DOE will likely need to identify definitive time periods for interim storage and what measures will be taken if such time periods are exceeded. Also, the DOE should re-establish a single point of contact to ensure accountability for engagements and interactions with potential host communities.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

As stated in our General Comments, it is USNIC's view that the local unit of government or tribe of jurisdiction where the facility is intended to be sited and the state government appear to us to be the primary parties whose consent is necessarily vital for any storage or permanent disposal facility. Therefore, their support is of the utmost importance in development of an enduring partnership with the federal government in hosting nuclear waste facilities.

Moreover, when working with potential local, tribal, and state government hosts, DOE needs to be flexible in developing and tailoring any potential partnership to meet the specific needs and requirements of the host communities.

7. What other issues, including those raised in the *Draft Consent-Based Siting Process* ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

See Comment to Area 1 Question 2

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

The biggest barrier is the lack of trust and confidence in the DOE that the consolidated interim storage facility is truly interim in nature. In order to overcome this mistrust, DOE must establish a credible permanent repository program.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

DOE should consider providing resources to local and states officials that enable them to engage with their respective university systems to provide reliable and credible information on any proposed consolidated storage facility.

3. **How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?**

DOE should consider providing potential host communities with the necessary support to provide access to credible subject matter experts in various fields. This could include subject matter experts from the DOE national laboratory system or from other credible academic or leading scientific and technical institutions.

4. **How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?**

See response to Area 1 Question 2.

DOE should start interactions with the State Governments first and leverage the range of benefits available from the federal government to encourage state cooperation.

5. **What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?**

Potential host communities will undoubtedly require significant of information from credible sources spanning a range of topics, including the safety of the planned facilities and potential environment impacts as well as potential benefits available to the host community. See responses to Area 2 Questions 3 and 4.

Area 3: Interim Storage as Part of a Waste Management System

1. **How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?**

The most fundamental way for DOE to ensure social equity and environmental justice considerations are addressed is for DOE to be completely candid and honest in all of its interactions with stakeholders and to provide stakeholders with reliable and credible information pertaining to any concerns. A prime example of the U.S. Government failure at social justice is the Private Fuel Storage efforts where the U.S. government obstructed a native American Indian tribe's efforts to develop a centralized interim storage facility. Another example is the U.S. Government's failure to meet its obligation to remove Spent Nuclear Fuel from the Prairie Island Indian Nation as well as other communities where spent fuel is stored, especially at stranded sites across the country where there is no reason for the spent fuel to remain (i.e., no power production by a nuclear plant at the site the spent fuel is stored).

2. **What are possible benefits or drawbacks to co-locating multiple facilities with waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?**

Co-location of waste management and/or other types of facilities together will generally have a beneficial impact on the development and operation of the infrastructure required. The long periods to study, license, construct, and operate these facilities provides the benefits of jobs and economic development to the local communities.

3. **To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?**

Aside from any formal regulatory and/or statutory requirement, recent experience in Utah, New Mexico, and Texas related to the siting of interim storage facilities amply illustrate there is an intrinsic linkage when potential host communities consider siting consolidated storage facilities without a credible ongoing, permanent repository program.

The lack of a repository program for the permanent disposal of spent fuel requires stakeholders to consider the real possibility that the spent fuel stored at a consolidated storage facility could remain indefinitely at the consolidated storage location.

4. **What other issues should the Department consider in developing a waste management system?**

See General Comments.

**U.S. Nuclear Industry Council (USNIC)
Comments on Consent-Based Siting**

**Response to Invitation for Public Comment on Consent-Based Siting
July 29, 2016**

The Nuclear Industry Council (USNIC) is pleased to respond to the Department of Energy's (DOE's) request for comments¹ on a consent-based siting process for facilities engaged in used nuclear fuel (UNF) and high-level radioactive waste (HLW) storage and disposal activities.

USNIC is the leading U.S. business consortium advocate for new nuclear energy and promotion of the American supply chain globally. USNIC's membership is comprised of over 80 companies doing business in the nuclear energy industry. While these views represent the consensus views of the Council and its Backend of the Fuel Cycle Working Group, they do not necessarily represent the specific views of individual member companies and organizations.

First, USNIC wishes to provide some general overall comments on the appropriateness of moving forward with consent-based siting at this time within the context of an integrated program to discharge the federal government's responsibilities for managing and disposing of UNF and HLW. As reference, a USNIC delegation also attended the April 11, 2016, DOE Consent-Based Siting Workshop and provided comments to the DOE at that time.

General Comments

Today, the America's nuclear waste management program stands at an impasse. As a result, there is no available disposal pathway for the nation's growing inventory of both commercial and defense used nuclear fuel and high-level waste. Currently, used fuel and high-level waste (HLW) from both commercial and defense activities remain in storage at 121 sites in 39 states. U.S. commercial spent fuel inventories now exceed 75,000 metric tons at 99 operating reactors and 13 shutdown sites.

It has been more than 30 years since enactment of the Nuclear Waste Policy Act (NWPA); more than 18 years since the federal government failed to meet its statutory and contractual obligation to begin removing used fuel from nuclear power reactor sites; more than seven years since the Yucca Mountain license application review process began; and more than five years since the Obama Administration defunded the repository program and dissolved the Office of Civilian Radioactive Waste Management (OCRWM).

This impasse is costing U.S. taxpayers billions of dollars. The current estimate of federal liabilities is approximately \$24 billion and growing – a \$10 billion increase since the Obama administration first moved to terminate the Yucca Mountain project. In addition to these mounting costs, failure to bring closure to the backend of the nuclear fuel cycle adversely impacts nuclear energy as a much needed component for low carbon, reliable and affordable electricity. Moreover, as noted by the President's own Blue Ribbon Commission, the continued stalemate is damaging America's global standing on issues of nuclear safety, nonproliferation and security.

Given this background, USNIC questions the need to establish a new process at this time for UNF and HLW storage and disposal facilities when such facilities are already subject to extensive

¹ Federal Register / Vol. 80, No. 246 /Wednesday, December 23, 2015, 79872-79874.

siting and licensing regulations under the Atomic Energy Act, Energy Reorganization Act, National Environmental Policy Act, and the Nuclear Waste Policy Act.

Major infrastructure facilities are sited all over the U.S. every day by government and private industry and include:

- Hazardous waste disposal facilities;
- Natural gas pipelines;
- Electric transmission lines; and
- Solar and wind farms.

Accordingly, USNIC believes there is no need for an additional bureaucratic overlay unique to the siting of UNF and HLW facilities. The DOE should follow existing law, specifically the Nuclear Waste Policy Act. Moreover, there should be no retroactive application of any new siting processes for the Yucca Mountain Project or private-sector consolidated storage facilities currently progressing under the processes defined by existing laws and regulations. The DOE should appropriately focus on restoring stakeholder confidence in a stable, predictable, and durable process that is science-based and leverages the private sector for implementation.

A consistent theme voiced by the full range of stakeholders present at the DOE's Atlanta Workshop was the lack of trust and confidence in the DOE to sustain its commitments through the full implementation of any siting process. Such trust and confidence comes from transparency, accountability and compliance with existing laws and regulations. DOE's unilateral abolishment of the Office of Civilian Waste Management (OCWRM) has significantly harmed DOE's standing in the stakeholder community and now undermines its very effort to establish the credibility of a new siting process. This current lack of trust and confidence in the DOE was fully demonstrated recently when DOE failed to secure local community support for siting its Deep Borehole test facility.

Accordingly, as a first step in establishing trust and confidence in the DOE nuclear waste management program, DOE should immediately re-establish the OCWRM and then begin working with Congress to establish an enduring organization and management entity that is worthy of trust and confidence by all affected stakeholders.

USNIC Backend Task Force Recommendations

The U. S. Nuclear Industry Council's Backend Task Force was established in 2012 to follow matters related to used fuel management and encourage actions to resolve the impasse over the nation's nuclear waste management program and has developed a comprehensive set of recommended actions to move the program forward.

The USNIC Backend Task Force believes that Congress and the Executive Branch should address needed program reforms in a bipartisan fashion, adopting a comprehensive approach that includes provisions to move forward with the Yucca Mountain project and development of consolidated interim storage capabilities, assures the availability of associated transportation infrastructure, and aligns organizational focus and resources behind the effort.

Specific features of a comprehensive approach include:

- ***Yucca Mountain Repository Project.*** As a cornerstone to any comprehensive program, the NRC environmental and safety review of the Department of Energy (DOE) Yucca Mountain license application must be completed, culminating in a final agency decision to authorize (or not) construction of the repository. This action should include steps to re-establish a DOE interim organization, such as OCRWM; and enactment of legislative provisions for (i) securing the necessary land withdrawal and water rights and (ii) providing benefits to local and state governments in return for hosting a repository.
- ***Consolidated storage.*** The government should pursue consolidated interim storage capabilities, including the necessary funding for site evaluation, development, and licensing activities as well as funding to potential host communities and states for monitoring, participation and evaluation of project-related activities. Private sector storage solutions should be encouraged and first priority should be given to used fuel currently residing at sites with no operating reactor.
- ***Assuring shared value for host communities.*** The development of facilities for management and disposal of used nuclear fuel and HLW represents a significant investment in our nuclear infrastructure and provides a unique platform for economic development and future research development and demonstration (RD&D). As a committed partner in assuring the successful siting and operation of these facilities, the federal government should provide the necessary resources for impact assistance along with tailored incentives that support the long-term mission of the site and its value to the host community.
- ***Management and funding reform.*** This action should include the establishment of a separate, politically independent but accountable federal corporation-type organization which is mission-based and structured to execute all necessary steps and activities to develop, license, construction, operate and decommission nuclear used fuel and high-level waste storage facilities and permanent repositories. In addition, the Nuclear Waste Fund must be restructured so that access to both the fund's assets and annual receipts are available for expenditure by the new entity, subject to appropriate congressional oversight.
- ***Transportation planning and execution.*** Near-term work should focus on assuring the availability of necessary infrastructure and capabilities (railcars, rail spurs/alternatives etc.), to move used fuel and high-level waste to consolidated storage facilities and repositories. To the maximum extent practicable, the private sector should be utilized to implement these activities.
- ***Research, development and demonstration.*** Continued work must enable advanced reactor and backend technologies that offer the promise of improved economics, enhanced safety, improved utilization of energy resources and optimization of waste management and disposal based on the established existing regulatory framework and requirements.

Comments on Specific Questions:

Reference: Federal Register Vol. 80, No. 246, p. 79872 “Invitation for Public Comment to Inform the Design of a Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities, December 23, 2015.

1. How can the Department of Energy ensure that the process for selecting a site is fair?

DOE cannot ensure fairness because fairness is a subjective, not objective, concept. Different people value different things in different manners; what makes something “fair” to one person may be irrelevant to another person. For example, suppose a geologic repository were to be sited in a location that minimized the probability of a release of radionuclides to future inhabitants. That could be construed as “fairest” to those in the future. At the same time, if this safe location was in an area that has no nuclear power plants, the current inhabitants could complain that they reap little or no benefit from the nuclear energy enterprise, yet bear some risk due to the repository location. Both are valid ways of assessing fairness, yet they lead to a different result.

In selecting any site for waste management beyond those current authorized by the Nuclear Waste Policy Act or currently docketed by the U.S. Nuclear Regulatory Commission, DOE should strive to satisfy several criteria.

- A facility on the site meets applicable environment, health, safety and scientific criteria, with margin.
- A facility on the site can meet its mission requirements.
- The facility does not impose an undue burden on its host community or, if it does, there is adequate compensation and/or incentives commensurate with the initiative.
- The cost is reasonable.
- All potential host communities have an opportunity to be considered, if they so desire.

2. What models and experience should the Department of Energy use in designing the process?

The “models and experience” depends on the type of facility. A consolidated storage facility, for example, is interim in nature and poses essentially no risk to nearby inhabitants in normal operation and accident conditions. Therefore, beyond the conditions already necessary to license and operate a consolidated storage facility, “consent” requirements should be no more onerous than requirements for any other facility that stores and processes hazardous materials (e.g., a chemical plant or an oil refinery).

A geologic repository is a different situation. A repository, like the consolidated storage facility, poses essentially no risk to current neighbors. However, if the facility does not provide effective long-term waste isolation then future inhabitants could be at risk. In this situation, analogous situations would include landfills, low level waste disposal facilities, hazardous waste disposal facilities and injection wells.

3. Who should be involved in the process for selecting a site, and what is their role?

The entity that owns and operates the facility should have primary responsibility for selecting a site. Considerations in site selection include economics, logistics, availability of suitable land, etc. The owner/operator should consider the ability to obtain the necessary permits and other approvals from local, state and federal authorities. The owner/operator should consider the prevailing local sentiment about having the facility in the community, recognizing that unanimous support is not a reasonable goal for a nuclear facility. The agency responsible for safety oversight must decide whether or not the facility meets applicable requirements.

With respect to people or entities not directly involved in the project, the question gets to a fundamental point – if a facility does not present a significant adverse impact to others, why should those others have veto power over it? Is proximity enough to warrant control, and if so, how much proximity? Is it based on distance, unit of government, or what? How many unhappy people are too many? These questions have no definitive answers, which brings into question the entire concept of “consent-based” when there are no rules for deciding when you have “consent.” The unsuitability of applying a one-size-fits-all standard of “consent” further emphasizes the need to focus on satisfying the objective, site-specific, and science-based criteria embodied by existing environmental and licensing requirements.

4. What information and resources do you think would facilitate your participation?

DOE should provide as much information as possible about the characteristics, concept of operations, and plans for the facilities it intends to site. Economic impact estimates should be provided. Moreover, there should be clear and understandable safety regulations for all activities.

Note: There are currently no modern, understandable environmental standards for geologic repositories other than Yucca Mountain.

5. What else should be considered?

There is an urgent need to restore Federal government credibility as a partner in executing its responsibilities for the management of used nuclear fuel. The unilateral termination of the Yucca Mountain repository program and the subsequent lack of meaningful DOE action have greatly undermined trust in the durability of the Federal Government’s institutional commitments. Continued deferral of DOE’s responsibility assures the escalation of taxpayer liabilities and strongly discourages the development of beneficial private sector solutions.

Further Information:

Ed Davis (e [REDACTED])

From: Judi Angell
Sent: Thursday, February 17, 2022 11:58 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI response

Thank you for the opportunity to comment on your proposal that is much like the problematic historic approaches that consider no options other than putting vulnerable communities at risk and additional people at risk by plans to move it where all kinds of people might become at risk.

The most equitable and appropriate approach would be to ensure the entities/corporations take responsibility for safe storage on property they own ensuring that surrounding communities are never exposed by using practices proven to be that safe.

No further/additional nuclear waste should be allowed to be created by any such entities/corporations until that have demonstrated they have done so.

Their failure to plan to handle this problem should not turn into a public health problem.

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From: Anns Thoughts
Sent: Wednesday, March 2, 2022 3:50 PM
To: Consent Based Siting
Subject: [EXTERNAL] Hazardous materials

Should not be created, especially if there is no plan to safely process it on site to be environmentally friendly for all

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From: [REDACTED]
Sent: Thursday, February 3, 2022 2:12 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

To Whom It Concerns:

Please withhold my name, address, email address, or other identifying information from the public record of comment documents.

From:

[REDACTED]
[REDACTED]
[REDACTED]
([REDACTED]

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

Social equity and environmental justice should be a top priority for “consent-based siting” of federal, so-called “consolidated interim storage facilities” (CISFs). It is highly improper to float the offer of jobs, infrastructure development, and potential funding to BIPOC (Black, Indigenous, People of Color) communities, low-income communities, and such communities already disproportionately impacted by hazardous facilities, and portray it as a social equity and environmental justice advancement. BIPOC, low-income, and already heavily polluted communities should not be further disproportionately impacted with CISFs for one of the most hazardous substances ever generated by human society, highly radioactive irradiated nuclear fuel.

As Keith Lewis, environmental director for the Serpent River (Ojibwe) First Nation near Elliot Lake, Ontario, Canada, is quoted as saying in This Is My Homeland: Stories of the Effects of Nuclear Industries by People of the Serpent River First Nation and the North Shore of Lake Huron (edited by Keith Lewis, Lorraine Rekmans, and Anabel Dwyer; published by Serpent River First Nation, 1998 & 2003) — “There is nothing moral about bribing a starving man with money.” He was speaking about the devastation done to his First Nation, and its homeland, by the offer of hazardous uranium mining and milling jobs beginning in 1948, and ending altogether by 1996. The jobs are long since gone, but the devastation goes on.

DOE itself has a most shameful tradition of targeting Native American reservations for CISFs. See the 2005 NIRS/Public Citizen factsheet, “Radioactive Racism.” This shameful history cannot be repeated now or in the future. There is also a pattern of federal CISF schemes turning into private CISF schemes, such as the Private Fuel Storage, LLC CISF, targeted at the Skull Valley Goshutes Indian Reservation in Utah. Currently, private CISFs targeting New Mexico and Texas could effectively become federalized, if DOE pays all costs, including a hefty profit margin to the private owners. However, such an arrangement is illegal. The Nuclear Waste Policy

Act of 1982, as Amended, prohibits DOE from taking title to/ownership of commercial irradiated nuclear fuel at a private CISF, unless and until a permanent repository is licensed and operating.

Significantly, New Mexico is a majority minority (Latinx, Indigenous) state, with widespread poverty issues. It is also disproportionately impacted by nuclear and fossil fuel industrial pollution, and other hazardous industries. Such disproportionate impacts are especially acute at the Holtec, NM and Interim Storage Partners, TX CISF sites (the latter just 0.37 miles from the NM state line, and upstream). These disproportionate impacts are compounded by the two CISFs, proposed to “temporarily store” a grand total of 173,600 metric tons of commercial irradiated nuclear fuel and highly radioactive waste (almost twice the amount that currently exists in the U.S.), being located just 40-some miles apart. These proposed CISFs are an attempt to turn the TX/NM borderlands into a high-level radioactive dump sacrifice area.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Tribal, State, and Local governments should have free, and fully-informed, consent-based siting rights, including an absolute veto against a federal CISF. That is, Tribal, State, and Local governments should have fully-informed, absolute, binding, and final rights to non-consent. Any DOE, or private, scheme to construct and operate a CISF must cease and desist immediately, once Tribal, State, and/or Local government “hosts” express their non-consent. In addition, consent-based siting rights should extend directly to the citizens/residents of the tribal reservation, state, and/or locality. Free, and fully-informed, consent-based siting rights should extend to citizens/residents, who should also have absolute and final veto rights to block CISFs.

For example, the Saugeen Ojibwe Nation in Ontario, by an 86% to 14% tribal referendum vote in January 2020, blocked the construction and operation of a permanent repository for all of Ontario’s so-called “low-,” and highly radioactive intermediate-, level radioactive wastes.

Free, and fully-informed, consent rights to consent, or not consent, should be extended as widely as possible, including to the public, not just to elected or appointed government leaders. And such free, fully-informed consent, with absolute and final state veto power, should also extend to permanent repositories, not just CISFs, as the Nevada U.S. congressional delegation has asserted for the past several years, with its re-introduction each congressional session of the Nuclear Waste Informed Consent Act.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

As DOE Office of Nuclear Energy’s own Blue Ribbon Commission on America’s Nuclear Future (BRC) recommended in its Final Report in January 2012, DOE should no longer be in charge of irradiated nuclear fuel and highly radioactive waste management. A major reason for the public’s irreparable loss of trust in DOE is its incompetence, or worse, at managing irradiated nuclear fuel and highly radioactive waste over decades past. Hence DOE must be replaced. This recommendation was as much of an overarching priority as the need for “consent-based siting” itself. This of course represents a major barrier and impediment to DOE’s attempt to site federal CISFs, even supposedly using a “consent-based” process. DOE should not be advancing this Request for Information and public comment proceeding. Any such initiatives should be left to the replacement agency, organization, or body, advocated by BRC a decade ago. Why is DOE driving this train, when its very own BRC strongly recommended DOE be replaced?

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

As an important part of fully-informed consent-based siting of CISFs, DOE should clearly admit to potential host communities that so-called “interim storage” facilities could easily become de facto permanent surface

storage, de facto permanent surface disposal, or parking lot dumps. Given that highly radioactive wastes, such as irradiated nuclear fuel, remain hazardous for at least a million years (as acknowledged by the U.S. Environmental Protection Agency, in its court-ordered rewrite of its Yucca Mountain regulations, published in 2008), containers and facilities will degrade and fail, unless regularly replaced. The U.S. Nuclear Regulatory Commission assumed, in its 2014 Generic Environmental Impact Statement on Continued Storage of Spent Nuclear Fuel (previously called the Nuclear Waste Confidence Rule), that CISFs, once constructed and operating, would be replaced in their entirety, once every hundred years. So communities targeted by DOE for federal CISFs must be fully informed that the high risks of highly radioactive wastes will persist for at least a million years, and that unless the CISFs are replaced once per century in their entirety, those radioactive hazards would be unleashed into the local environment, to blow with the wind, flow with the water, and cause harm, downwind, downstream, up the food chain, and down countless generations into the future.

In a previous DOE RFI regarding CISFs, none other than Holtec International itself advised DOE that “interim” has to be assumed to last at least 300 years. Per the NRC immediately above, that would mean at least three complete replacements of the entire CISF, to stave off age-related degradation container failure. Where would the funding come from to do so? Neither NRC nor DOE have answered that question. What would the consequences be if such replacements did not take place, such as due to lack of funding, or loss of institutional control? NRC Chairman Macfarlane penned a warning, when NRC approved its Continued Storage of Spent Nuclear Fuel GEIS (formerly called Nuclear Waste Confidence Rule, but more truthfully dubbed a Nuke Waste Con Game), that institutional control will, by definition, someday be lost. Once that happens, what will be the consequences at CISFs?

These questions and concerns, and many others regarding the high risks of CISFs, must be communicated clearly to potential “host” communities, so they know what they are getting into. If this does not happen, fully-informed consent would be violated.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

As provided for in the Nuclear Waste Policy Act of 1982, as Amended, regarding permanent repositories, the DOE should also provide funding to states, Native American tribal governments, and Affected Units of Local Government, being targeted for federal CISFs. Such funding is essential for attaining fully-informed consent, including for the hiring of independent experts, and the performance of independent technical, sociological, and other research.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

As mentioned above, BIPOC and/or low-income communities, as well as those already disproportionately polluted, should not even be targeted for CISFs in the first place. It would be an environmental justice violation, on its face. But DOE could and should support BIPOC and/or low-income communities, especially those already shouldering disproportionately high hazardous industry burdens, in consent-based siting of safe, clean, renewable energy and energy efficiency economic development. This would comport with the Biden administration’s stated EJ principles.

Importantly, Latinx communities often have a large percentage of residents for whom Spanish is their primary or only language. Such is the case in the region surrounding the privately owned CISFs targeting the Permian

Basin in New Mexico and Texas currently. Along one stretch of railway (El Paso to Monahans in West Texas) that would carry high-level radioactive wastes to one or both of these CISFs if they are constructed and operated, the Latinx population represents 92% of the overall population, and 49% of the population does not speak English well.

Thus, for DOE to meaningfully communicate with such populations, all written and verbal communications must not only appear in English, but also Spanish.

Similarly, numerous Indigenous Nations have been and still are targeted for CISFs, whether privately-owned or federal. Again, all communications must be translated into all local Indigenous languages. This is especially important given the leadership role of elders in traditional Indigenous Nations; many elders speak their Native language, with English (and/or Spanish) a distant second, if at all.

Along similar lines, DOE must always be conscious of digital divides. Given the disproportionately high poverty rates, rural locales, and other socio-economic challenges faced by many BIPOC and low-income communities, including those already beset by disproportionate hazardous pollution burdens, many citizens and residents that would be most impacted by CISFs, do not have ready internet, nor cell phone, access. Despite this, especially in this era of pandemic, most to all federal government proceedings (including this one, DOE's RFI re: CIS "Consent-Based Siting," is mostly to entirely internet-based). New Mexico, currently targeted by a private CISF (Holtec), with very likely DOE involvement (albeit illegal), and previously targeted by DOE for a federal CISF (at the Mescalero Apache Reservation, which was then later targeted by a private CISF, Private Fuel Storage, LLC), is a case in point. The majority minority (Latinx, Indigenous) State of New Mexico faces many socio-economic challenges, in addition to its disproportionate nuclear, fossil fuel, and other hazardous industry pollution levels. Among these is the current lack of access, by many New Mexico citizens and residents, to the internet, and reliable telephonic connections. Thus, if DOE proposes to undertake consent-based siting interactions in such places, the agency must be prepared to rectify such digital divides. If not, any claim of "consent-based siting" rings hollow and empty, a merely meaningless check the box PR exercise.

Last but not least, the hearing and visually impaired, or person with other physical challenges, must have full access to all communications, just like everyone else in society. Not only does the Americans with Disabilities Act require this by law of federal agencies like DOE, but it is the right thing to do. Numerous persons with hearing impairments spoke out at an NRC DEIS public comment meeting re: CISF applications in the recent past, objecting to the illegal, high hurdles they faced in simply taking part.

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From: Sholey Argani
Sent: Wednesday, March 2, 2022 4:12 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Sholey Argani



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From: Lauren Rodman
Sent: Friday, March 4, 2022 12:32 PM
To: Consent Based Siting; Trunzo, Alisa
CC: Secretary; Huff, Kathryn; Petry, Kimberly; [REDACTED]
[REDACTED] Elizabeth Helvey, PMP
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: TRMTC Comments on CBS RFI 86 FRN 68244.pdf

Ms. Trunzo,

The Tribal Radioactive Materials Transportation Committee (TRMTC) respectfully submits the attached comments in response to the U.S. Department of Energy (DOE) Office of Nuclear Energy's (NE) *Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities* (86 FR 68244).

Please contact me, staff support to TRMTC, regarding any matters related to these comments.

Let me know if you have additional questions, and we look forward to continued engagement on this issue.

Best,

Lauren Rodman

Lauren Rodman
Senior Policy Advisor
North Wind Site Services
[REDACTED]
[REDACTED]



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TRMTC

Tribal Radioactive Materials Transportation Committee

Agua Caliente Band of Cahuilla Indians

Confederated Tribes of the Umatilla Indian
Reservation

Consolidated Group of Tribes and
Organizations

Little Traverse Bay Bands of Odawa Indians

Mashpee Wampanoag Tribe

Morongo Band of Mission Indians

Navajo Nation

Nez Perce Tribe

Omaha Tribe of Nebraska

Oneida Nation of Wisconsin

Prairie Island Indian Community

Pueblo de San Ildefonso

Pueblo of Jemez

Pueblo of Laguna

Pueblo of Pojoaque

Pueblo of Tesuque

Santa Clara Pueblo

Seneca Nation

Shoshone-Bannock Tribes

Timbisha Shoshone Tribe

U.S. Department of Energy
Office of Nuclear Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585
March 4, 2022

Dear Ms. Trunzo,

The Tribal Radioactive Materials Transportation Committee (TRMTC) respectfully submits the following comments in response to the U.S. Department of Energy (DOE) Office of Nuclear Energy's (NE) *Notice of Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities* (86 FR 68244).

These comments highlight the key concerns of TRMTC and should not be viewed as representative of any specific Tribe, nor as representative of all Tribes. Please contact Lauren Rodman, staff support to TRMTC, at [REDACTED] regarding any matters related to these comments.

Please let us know if you have additional questions.

Sincerely,

Richard Arnold

Richard Arnold, Pahrump Paiute Tribe/Consolidated Group of Tribes and Organizations
TRMTC Co-Chair

Ron Johnson

Ron Johnson, Prairie Island Indian Community
TRMTC Co-Chair

**Tribal Radioactive Materials Transportation Committee (TRMTC) Comments in Response to
Department of Energy's *Request for Information (RFI) on Using a Consent-Based Siting Process to
Identify Federal Interim Storage Facilities*
(86 FR 68244)
March 4, 2022**

The Tribal Radioactive Materials Transportation Committee (TRMTC) consists of representatives from 20 federally recognized Native American Tribes throughout the United States that are or may be impacted by U.S. Department of Energy (DOE) activities relating to the transport of radioactive waste and materials, including spent nuclear fuel (SNF) and high-level radioactive waste (HLW). The mission of TRMTC is to provide DOE with tribal input on programs and activities relating to the transportation and storage of radioactive materials, SNF, and HLW.

TRMTC is primarily concerned with issues related to transportation. A future consent-based siting (CBS) program to site a federal interim storage facility (ISF) will impact tribal nations throughout the U.S. in both the siting of a facility and the transportation of SNF and HLW to a future facility. Given the questions posed in the RFI and the intricately linked nature of siting and transportation, TRMTC's comments encompass transportation and additional topics related to siting and the role of Tribes in any siting effort. In developing these comments, TRMTC took into consideration previously submitted tribal comments during DOE's 2015-2016 CBS effort, the *Blue Ribbon Commission on America's Nuclear Future*, Executive Order (EO) 13175, the Biden Administration's *Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships*, and the following DOE documents: *CBS Summary of Public Input Report*, *Draft CBS Siting Process*, and DOE Order 144.1.

Consistent with our mission, TRMTC offers the following comments on DOE's *Notice of Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities* (86 FR 68244). These comments represent the key concerns of TRMTC and should not be as viewed as representative of any specific Tribe, nor as representative of all Tribes.

Overarching Comments

- 1.) **Need for a New Federal Organization:** While we are encouraged by DOE's efforts to restart a CBS process, in order for a CBS process to be successful, it must be removed from DOE and established under a new federal authority, as recommended by the *Blue Ribbon Commission on America's Nuclear Future*. As raised by public commenters, organizations, industry, and independent commissions alike, successfully tackling this issue cannot occur through DOE, an organization that suffers from a lack of public trust and confidence, and an organization tasked with both promoting new nuclear and addressing the back-end of the fuel cycle. Additionally, addressing this issue will require stable, reliable appropriations funding – not subject to changing administrations – and senior leadership and experience on this issue.
- 2.) **Top-Level Leadership:** Since forming a new federal organization requires Congressional action, there are essential steps DOE can take towards this goal in the interim. First, we encourage DOE to form a new Nuclear Waste Policy Office reporting directly to the Secretary of Energy. Second, we encourage DOE to hire a director and staff for this

new office that are nationally and internationally recognized experts in handling socio-political, intergovernmental, and infrastructure challenges.

Each failed attempt to site an ISF or repository over the last 50 years has increased public cynicism and reduced trust in the federal government's ability to perform this work. If the current CBS process fails, it may irretrievably damage the country's ability to solve this national problem. It is therefore incumbent on DOE to do everything in its power to ensure the current effort is successful. At a minimum, this requires elevating the office to the highest level possible and hiring recognized experts in the field. Management must possess unparalleled skills and experience in the siting of large infrastructure projects, intergovernmental relations, public trust-building, and tribal and community engagement.

- 3.) **Sovereignty of Native American Tribes:** Any DOE action to establish a CBS process must recognize and abide by the unique obligations the federal government has with federally recognized Native American Tribes (referred throughout as Tribes). The CBS process must acknowledge this and abide by it. These obligations stem from the federal government's trust responsibility to Tribes, which encompasses legal, fiduciary, and moral obligations to protect tribal treaty rights, lands, assets, and resources. Numerous federal agencies have policies in place recognizing tribal sovereignty and affirming this trust responsibility. For DOE, this includes complying with EO 13175 (*Consultation and Coordination with Indian Tribal Governments*), DOE's *American Indian Alaska Native Tribal Government Policy* and its corresponding Order 144.1 (2009), as well as Secretary Granholm's recent efforts to update and improve the DOE Order and corresponding Implementation Plan. In January 2021, the Biden Administration released a *Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships*, which reaffirmed the Administration's commitment to EO 13175 and required federal agencies to submit a progress report on the status of each action included in the agency's plan, demonstrating the Administration's commitment to following EO 13175.
- 4.) **Tribal Consultation:** It is imperative that Tribes are brought into the CBS process early in this effort. In a CBS process, DOE must consult with federally recognized Tribes to determine which Tribe(s) may be affected by the eventual siting of an ISF and the potential transportation impacts to Tribes of each potential site. Federal consultation requires that it must be meaningful, done in good faith, and entered on a government-to-government basis. DOE must recognize that tribal nations are not bound to reservation boundaries; consultations should include consideration of tribal Trust Lands, ceded territories, treaty rights areas, and culturally affiliated areas in addition to reservation lands.

DOE will need to develop and communicate a consultation process that answers questions such as: How does DOE plan to identify with which Tribes to conduct consultations and outreach? Will DOE automatically conduct outreach to Tribes within 50 miles of a site (similar to how the U.S. Nuclear Regulatory Commission identifies Tribes potentially impacted by nuclear power plant sites)? How will each stage of consultations be structured? Who at DOE will be responsible for the consultations? What is the timeframe?

- 5.) **Tribal Sovereignty and States' Rights:** As previously discussed, Tribes possess the right of self-determination, are domestic, dependent nations with sovereign rights, and they are therefore not subject to state laws. Each Tribe determines the dynamic with the state within which their lands reside. A siting process needs to recognize that state approval is not needed if a Tribe wishes to enter negotiations with the federal government about hosting a storage

site. If a Tribe chooses to include a state in those negotiations, it is because tribal leaders of a specific Tribe have decided that is their preferred path forward, and it will vary depending on the Tribe. The DOE process needs to uphold tribal sovereignty at every step of the siting process.

- 6.) **Funding to Participate:** Funding and technical assistance should be provided to Tribes to participate in all stages of the CBS process. Tribes often do not have the same resources, staff capacity, or time as states, so DOE must take proactive steps to ensure that Tribes can participate in the process. We encourage DOE to consider creative strategies to facilitate tribal participation, including hosting tribal-specific trainings or other sessions to foster mutual learning and collaboration. Furthermore, funding provided to Tribes must be able to be used by Tribes to hire their own, independent experts.
- 7.) **Current CBS Effort:** While movement on this issue is welcome and desired after roughly five years of inaction since DOE abruptly ended their previous CBS efforts, the newly reestablished CBS process appears rushed. It would be beneficial if DOE could explain how the CBS process fits with the *Nuclear Waste Policy Act* (NWPA). What steps does DOE plan to take to ensure a CBS process can move forward? It is also currently unclear how the CBS process fits into the Administration's overall strategy. Does DOE plan to update its 2013 *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*? Additionally, how does the CBS process apply to private efforts to site an interim storage facility?

It is unreasonable to expect stakeholders or the public to participate in this process without more clarity about the approach. Repeating the same process followed five years ago will not result in success. We recommend the following:

- A. The first order for any siting attempt of a controversial facility should be “do no harm.” Previous siting attempts (e.g., the Nuclear Waste Negotiator working with Fremont County, Wyoming, and the Private Fuel Storage attempt in conjunction with the Skull Valley Band of Goshute Indians in Utah) caused acrimonious debate that damaged, or came close to damaging, the social fabric of the communities and governments involved. DOE must avoid this outcome at all costs; if a Tribe will be worse off for having participated in the CBS process, why should they enter the process at all? This potential risk strengthens the recommendation that DOE must elevate the profile of this siting effort and hire leadership of the highest quality in order to avoid similar outcomes.
- B. The role of other stakeholders appears missing in the CBS process. Other agencies, such as the U.S. Nuclear Regulatory Commission, have a role to play in the management of SNF and HLW and will certainly play a role in CBS. Furthermore, the CBS process appears to overlook the role of industry. Regardless of whether a future facility is federal or private, industry must be part of the solution. DOE's CBS process must involve private industry, and the process followed to site a facility – federal or private - must be consent-based. In order for the CBS process to succeed, the roles of key stakeholders need to be considered and included in the CBS process.

- C. The current effort seems rushed and without context. We encourage DOE, once it has set up a Secretarial level office, to lead a national dialogue to seek agreement on the nature and scope of the problem. An RFI, followed by a Funding Opportunity Announcement (FOA), is not a national conversation.
- D. It is unclear what sets this CBS process apart from previous efforts. How will DOE avoid the pitfalls of the previous effort, which required significant effort by Tribes, states, non-governmental organizations, and interested members of the public but had no significant results? As a starting point, we suggest that DOE publish what it learned from previous efforts, with options for incorporating those lessons into the current effort. We also suggest publishing DOE's *Summary of Public Input Report* (and all associated public comments) on the CBS website. This would serve the dual purpose of indicating that DOE has heard previous comments and allowing interested parties to respond to DOE's suggestions for a potential path forward.
- E. Repeatedly requesting public comments on the same effort puts a burden on governments and communities to respond during each new cycle; given DOE's emphasis on reducing barriers to participation in the CBS process, DOE should be mindful of this. We request that DOE revisit previously submitted tribal comments, including comments submitted from individual Tribes and comments submitted from tribal working groups or committees, and review these comments as part of this new RFI. Additionally, TRMTC would like clarity regarding how DOE plans to consider tribal comments received on this RFI. Tribal comments should be given additional consideration, given that they represent the views of tribal nations, and should therefore be afforded greater weight than comments from other entities. At minimum, they should be treated in the same manner as Congressional correspondence.
- F. Finally, at the TRMTC mid-year meeting in San Diego, CA on January 26, 2022, Dr. Huff reported to the committee that DOE intends to publish a FOA by the end of 2022. TRMTC encourages DOE to reconsider this course of action this early in the process. Offering funding before most tribal nations have considered the issues at hand is premature and could potentially be viewed as bribery to accept risk to a Tribe or community. While Tribes and communities certainly need funding to participate in a siting process, TRMTC requests that DOE carefully and thoughtfully develop a siting process with the guidance of national and international experts that first builds trust and an agreed to fact basis. A FOA to begin siting negotiations or to ask communities to study whether they want to consider hosting a site leapfrogs over these critical first steps.

8.) **Transportation in a CBS Process:** The RFI's failure to mention transportation is worrisome. Transportation plays a pivotal role in any siting effort, as SNF and HLW will need to be transported throughout the country over the course of decades. During DOE's previous CBS effort in 2015-2016, transportation arose in public meetings and comments as a key concern and will remain a key concern during the current effort. How will DOE address the role of transportation in siting a storage facility? How will DOE respond to claims that the selection of transportation routes should be consent-based? What will DOE do differently in this CBS effort to address the public's understandings and concerns regarding transportation?

If the siting effort progresses and potential locations are identified, tribal governments will likely want to understand how each potential host location may impact transportation through their lands. DOE needs to consider how it will

engage with Tribes about the relative transportation impacts to each potential host site. Similarly, DOE needs to consider how it will handle the discussion of transportation impacts and transportation planning at each phase of a siting effort.

In addition, DOE has a responsibility to provide resources and funding for affected Tribes who will be impacted by shipments. Under Section 180(c) of the *Nuclear Waste Policy Act of 1982*, as amended (NWPA), DOE is responsible for providing technical and financial assistance to Tribes and states for training of local public safety officials through whose jurisdictions the Secretary of Energy plans to transport SNF or HLW to a NWPA-authorized facility. Tribal nations maintain responsibility for the health and safety of their citizens and DOE has a responsibility to assist tribal emergency management offices and public safety departments in preparing for these shipments.

- 9.) **Environmental Justice:** This RFI's emphasis on Environmental Justice (EJ), as well as the Biden Administration's Justice40 Initiative, while welcome by underserved and disadvantaged communities, does not replace the need for government-to-government consultation. As sovereign nations, government-to-government consultations is required between the federal government and Tribes, regardless of any federal actions taken to address EJ issues.

Responses to Select RFI Questions

Area 1: Consent-Based Siting Process

- 1.) *How should the Department build considerations of social equity and environmental justice into a consent-based siting process?*

Tribes are not and should not be considered stakeholders or EJ communities. As noted above, Tribes are sovereign nations, and the federal government has a duty to consult with Tribes, regardless of any EJ actions DOE may pursue. As such, TRMTC reiterates that the federal government has a trust responsibility to Tribes and must consult with them on a government-to-government basis; any CBS process must follow this and respect tribal sovereignty and the unique laws of each tribal nation. DOE must outline how it plans to conduct tribal consultation, and broader tribal engagement, throughout each stage of the CBS process. What is the process for involving Tribes as the CBS process evolves? This must clearly be defined by DOE, with input from participating tribal nations, at the outset of the process.

Access to resources and funding to participate will be key to allow communities to participate in the process. To incorporate tribal input into the CBS process, we recommend DOE create tribal specific working groups to participate in the design of the process. Additionally, DOE could consider creating a Council of Elders and Youth, following Canada's model, to provide input into CBS. However, these activities cannot supplant formal, government-to-government consultation. We also encourage DOE to reexamine previously submitted comments during DOE's public meetings held from 2015-2016, as well as those received on DOE's *Summary of Public Input Report*.

2.) *What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?*

The siting of an ISF will require government-to-government consultations between DOE and Tribes. Any facility siting process must recognize tribal sovereignty; each tribal nation is unique and will hold their own views whether they wish to engage with DOE or a private entity over potentially hosting an ISF. Similarly, if a state or community plans to host a facility near tribal lands, DOE must consult with any impacted Tribe(s) to consider their priorities, values, and preferences regarding whether they accept a nearby facility and/or what role Tribes may have in workforce development and other potentially co-located facilities or businesses (including but not limited to the types of benefits that could be negotiated). See #5 in Overarching Comments for additional discussion.

What is DOE's definition of consent? From TRMTC's perspective, each tribal nation will need to determine what constitutes consent for their Tribe. However, DOE will need to develop a set of parameters, developed from a national dialogue, that guides the process and each step so that tribal nations understand what is involved in the siting process. As previously stated, these areas of expertise include the siting of large infrastructure projects, resolving socio-political disputes, communicating with indigenous populations as well as the general public, and managing intergovernmental relations primarily with tribal and state governments.

3.) *What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?*

Each tribal nation is unique and has their own views and circumstances that will impact whether they would like to be involved in DOE's effort. Before discussing benefits and opportunities, DOE needs to ensure that communities are aware of this effort (see #7 in Overarching Comments). Tribal Liaisons or POCs within DOE should conduct outreach to Tribes, tribal working groups/committees, and any other Tribes who may be impacted. At a minimum, DOE should notify every Tribe in the US of this effort via written letter and conduct follow-up via various methods. It is likely that many Tribes are not aware of this national problem, nor the current effort to solve it. When notifying Tribes, DOE must be clear and precise; a reliance on technical jargon will not facilitate Tribal (or other) involvement in learning more about the process. Additionally, DOE must conduct formal, government-to-government consultation with any Tribe interested in learning more or any Tribe potentially impacted by a proposed ISF.

It is imperative that the process to participate in CBS must not be arduous or burdensome to Tribes. Some recommendations that may encourage participation in the process include: creation of tribal working groups or a Council of Elders and Youth, providing funds and resources to Tribes (or others) to participate in the process (funds should include funding for activities such as learning, regardless of interest in hosting a facility), providing funding for Tribes (or others) to hire their own experts to conduct independent analyses, creating an online repository of information that is easily accessible, and providing the time to adequately respond to the RFI, evaluate the options, and participate in the process. This is a process that cannot be rushed, and Tribes will need adequate time to assess whether this is an activity in which they are interested in participating.

Funding and technical assistance should be provided to Tribes to participate in all stages of the CBS process. Tribes often do not have the same resources, staff capacity, or time as States, so DOE must take proactive steps to ensure

that Tribes can participate in the process. Furthermore, funding provided to Tribes must be able to be used by Tribes to hire their own, independent experts.

4.) *What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?*

Multiple challenges could impede a siting effort. Many of these challenges can be identified and strategized by studying previous siting attempts, starting with the nearly successful Monitored Retrievable Storage (MRS) effort in Tennessee in the 1980s. The below table summarizes a few items for DOE's consideration related to tribal involvement in facility siting efforts.

	Potential Impediment	Potential Solutions
1.	Conflict between tribal sovereignty and states' rights	See discussion in Overarching Comments, Item #5. DOE must recognize and reinforce tribal sovereignty. It will be each Tribe's decision how, or if, to engage a state in any negotiations.
2.	Funding and technical assistance for Tribes to participate	Adequate funding and technical assistance must be provided to Tribes to participate, particularly since Tribes often do not have the same resources and capacity to participate as states. DOE must recognize this, and considerations must be made for unique tribal circumstances, such as potentially holding independent tribal training sessions to allow communities to learn about the CBS process. Tribes should be allowed to hire their own, independent experts to conduct analyses.
3.	No "one-size-fits-all" approach with Tribes	DOE must recognize there is no singular approach to working with, engaging, and consulting with Tribes; each Tribe is unique and will hold their own views and values that DOE will need to acknowledge and work with. DOE should not expect to design a generic process for working with Tribes.
4.	Cultural Affiliation	DOE must recognize and consider cultural affiliation to a site as it progresses in the CBS process. DOE must develop guidelines, in collaboration with Tribes, for how it plans to address cultural affiliation concerns when considering potential sites.
5.	Loss of trust from previous failed siting attempts and implications for current effort	Build a world-renowned siting team and organizational structure giving this attempt the highest chance of success.
6.	Consistent funding and program priorities	Demonstrate to Congress that this attempt is serious and more likely to succeed than

		previous attempts by following the recommendations in the Overarching Comments in this submission.
7.	Social fabric of a Tribe damaged by controversy related to a Tribe's engagement in siting effort	Design the siting process carefully with measures in place to avoid this. See Canada's Nuclear Waste Management Organization (NWMO) process as an example (e.g., adequate training for federal agency staff to respond to questions, set up local information offices and hire local staff both in states and within tribal lands, ensure the decision-making power is shifted to the Tribe(s), not DOE, so that the Tribe(s) can exit the process or alter the process as fits their needs).
8.	Extended timeframe necessary to conduct a siting effort, consent-based or otherwise	Manage expectations about the duration of each step of the process and the overall length of the process. Communicate about a "go slow to go fast" design. For Tribes and tribal members who are skeptical about the CBS process, engage in conversation to identify and address their concerns, priorities, and values that inform the Tribe's decision-making.

5.) *What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?*

To develop a CBS approach, DOE needs to partner with organizations and individuals outside of DOE's standard partnerships. We encourage DOE to examine its past patterns and not repeat them. DOE should identify and seek to partner with the nation's leading practitioners and theorists in resolving socio-economic disputes, siting controversial facilities, and effective cross-cultural negotiations. These individuals and organizations can be found at universities and organizations (examples include but are not limited to Seth Tuler, who advised the *Blue Ribbon Commission on America's Nuclear Future*, and organizations such as the Consensus Building Institute).

DOE should also consider partnering with tribal organizations that can provide cross-cultural expertise and tribal perspective. Examples of this include but are not limited to the National Congress of American Indians, United South and Eastern Tribes, the Native American Rights Fund, and various regional tribal organizations as well. Another possibility is to interview tribal personnel involved in previous siting attempts, such as the Mescalero Apache and the Skull Valley Band of Goshute Indians. DOE could also seek partnerships with some of the 32 accredited tribal universities and colleges in the United States.

Area 2: Removing Barriers to Meaningful Participation

1.) *What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?*

DOE – and other federal agencies – must be consistent in how they interact with Tribes. Even within DOE, different offices do not interact with Tribes in a consistent manner. Existing tribal policies among the various federal agencies involved may need to be reexamined for consistency.

Failing to provide adequate notice will also prevent engagement in the CBS process. Notice must be provided early in the process and in a clear, concise manner, without relying on technical jargon. DOE must reach out to all potentially affected Tribes to notify them of this effort and to initiate information sharing. Notice must be given via multiple avenues – written letter, email, telephone, radio, listening sessions, etc. DOE must also recognize that not all Tribes have access to internet, and additional accommodations should be made to ensure all are notified.

Additionally, any Tribe which may be impacted by a potential facility will require government-to-government consultations throughout the process. DOE has a federal responsibility to consult and failing to consult with tribal nations on a government-to-government basis will prevent meaningful participation.

In addition to holding public meetings (in-person), DOE should consider holding tribal-specific meetings and/or trainings to help assist Tribes with gaining familiarity with the issue. Meetings will be needed with tribal leaders, tribal members, and regionally with multiple Tribes. Furthermore, DOE must create opportunities for Tribes to provide input, beyond the typical comment-response avenues. DOE could consider holding listening sessions, creating tribal working groups, establishing a Council of Elders and Youth (or similar), and working with Tribes to create a Traditional Ecological Knowledge Plan and Indigenous Policy.

Access to resources – financial, technical, and otherwise – poses a significant barrier to participation. Tribes may not have the staff, time, capacity, or resources to participate. Resources should be made available to Tribes (or others) to participate in the process, to work with DOE, as well as to work with other Tribes to examine issues in a collaborative manner. Tribes must be allowed to hire their own experts to conduct independent analyses. Furthermore, easy access to information, an online information library, regular communications, and independent experts who can be hired by a Tribe or community will be imperative. Establishing a DOE office or liaison within each community (including within states and Tribes) expressing interest in learning more about hosting a site – a model employed by Canada's NWMO – would serve to provide easy access, information, and resources to communities, as well as to help establish trusted relationships among DOE and potential host communities. Additionally, see earlier comments in Area 1, Questions #3 and #4 above.

2.) *What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?*

See response to Area 1, Question #3 above.

3.) *How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?*

Maximizing opportunities for mutual learning and collaboration will require significant investment in time and resources; the process cannot be rushed, and it requires that DOE spend more time reestablishing the basis of CBS with both tribal members and the general public by holding public meetings and informal conversational sessions to inform the public of the newly restarted CBS effort (see Question #4 below). Additionally, it will require commitment (financial and otherwise) and assurances by DOE that the CBS process will proceed regardless of changes in administrations.

More specifically, creating tribal working groups, holding tribal listening sessions, creating a Council of Elders and Youth (or similar), and exploring the creation of an Indigenous Policy, Traditional Ecological Knowledge Plan, or other policies could provide opportunities for collaboration with Tribes. Additionally, see previous responses, particularly in Area 1, Question #3 and Area 2, Question #1.

4.) *What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?*

Discussed during DOE's public meetings held during the 2015-2016 CBS effort (see DOE's *Summary of Public Input Report*), communications from DOE often tend to assume the listener has a significant amount of prior knowledge, which is seldom the case. We have three suggestions for DOE to address this communication gap:

- A. For all staff who will engage with tribal personnel, it is recommended that they obtain risk communication training and cultural sensitivity training from a highly reputable training source.
- B. Structure engagements with tribal representatives to be conversational and less "presentation" followed by "Q&A." It is recommended that DOE take time to sit down with tribal representatives in small groups and converse. This allows people to get their immediate questions answered and allows for trust-building between parties. Public meetings and formal engagements are useful, but DOE should consider adding informal, interpersonal interactions to the CBS effort.
- C. Develop communications graphics that provide context to the audience. As an example, graphics that display the DOE organizational chart, showing how large and complicated the agency is, and how one office fits into the larger structure, is a good start. Consider reestablishing ad hoc working groups through the National Transportation Stakeholders Forum to co-develop informational materials and graphics.

We encourage DOE to consider developing a communications model for CBS that is different from DOE's previous efforts. The provision of timely, trusted, and easily understood communications is essential to building sufficient public trust to overcome past skepticism, public distrust, and fear. DOE has not traditionally been able to communicate proactively or respond in a timely fashion because of the bureaucratic hurdles required to publish through DOE. The increase of social media and the speed with which misinformation spreads only increases this challenge. For the CBS process to succeed, DOE leadership must give the responsible office the leeway to build and implement a state-of-the-art communications and engagement model. A key part of this must include DOE taking a

proactive approach to providing information; a national information campaign is needed – prior to the start of a CBS process – that not only discusses DOE’s efforts but also raises general awareness of the challenge of SNF and HLW in the U.S.

Area 3: Interim Storage as Part of a Waste Management System

1.) What other issues should the Department consider in developing a waste management system?

Consider an exchange program where staff from the U.S. program and the Canadian Nuclear Waste Management Organization work embedded in each other’s programs for 6-12 months. This would allow for an exchange of best practices and creative approaches regarding the engagement of tribal nations in siting process.

From: Ellen Atkinson
Sent: Friday, February 25, 2022 6:48 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Ellen Atkinson

[REDACTED]

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From: Jeremy Fancher
Sent: Friday, March 4, 2022 9:37 AM
To: Consent Based Siting
Subject: [EXTERNAL] Western Interstate Energy Board - High Level Radioactive Waste Committee Consent Based Siting Comments
Attachments: HLRWC DOE Consent Based Siting RFI Comments Final.pdf

Hello, Please find the attached comments from the Western Interstate Energy Board High Level Radioactive Waste Committee. Thank you for starting this conversation off again and we look forward to continued engagement.

Best regards,

Jeremy Fancher JD, LLM
Program Manager – Nuclear Energy Policy
Western Interstate Energy Board

[REDACTED]

[REDACTED]

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March 4, 2022

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U.S.

David Bobzien
Chair

Maury Galbraith
Executive Director

Dr. Kim Petry,
Acting Deputy Assistant Secretary for Spent Fuel and Waste Disposition
U.S. Department of Energy
1000 Independence Avenue S.W.
Washington DC 20585

Dear Dr. Petry:

The Western Interstate Energy Board (WIEB) High-Level Radioactive Waste (HLRW) Committee appreciates the opportunity to offer its perspective on the Office of Nuclear Energy, Department of Energy (DOE) request for information on using a consent-based siting approach to selecting sites for temporary, consolidated storage of spent nuclear fuel (RFI). WIEB is an organization of eleven Western states and two Canadian provinces which focuses on promoting energy policies developed through the cooperative efforts of WIEB's members in collaboration with the federal government. WIEB's HLRW Committee is composed of representatives from twelve Western states who have expertise in the realm of spent nuclear fuel and high-level radioactive waste (SNF/HLW) transportation and storage. For over thirty years, the HLRW Committee has examined the issues that surround this topic, offering comments, developing policies, and interacting with federal, industry, tribal, and other state interests in this space.

At the outset, the WIEB HLRW Committee avers that in order for consolidated interim storage (CIS) of spent nuclear fuel to function, a credible permanent repository program is necessary. Without a repository program, it is extremely unlikely that any state governor or other consenting entity would agree to host an interim storage site, due to the heightened possibility that "interim" storage would become de facto permanent. Although the US has as yet been unable to redirect its efforts after the failure of its last repository program attempt, it must learn from its past failures and reshoulder this burden if it is ever to credibly handle the nation's nuclear waste. An integrated solution simultaneously addressing both interim storage and permanent disposal is essential. This approach has been recommended by the Blue Ribbon Commission on America's Nuclear Future, the National Academy of Sciences, and the Western Governors' Association, among others. The importance of co-development of a repository and any interim storage

facilities was also in the bicameral and bipartisan bills introduced to prevent the expenditure of federal funds on private interim storage facilities until a repository is operational.

The WIEB HLRW Committee supports the Western Governors' Association resolution which states that no interim storage facility "shall be located within the geographic boundaries of a western state or US territory without the written consent of the Governor in whose state or territory the facility is to be located."¹

Some individual WIEB states are responding to the RFI questions specifically. As a Committee we felt we would contribute additional value by offering a consolidated perspective concerning themes of trust, informed consent, and transparency that permeate the core purpose of the RFI. We also offer our collective thoughts on consent from communities that make up transportation corridors.

Trust

Any process that has as its desired outcome the consent of a community to host a SNF/HLW storage site will depend on trust. Here the DOE begins at a disadvantage because of its long legacy of sowing mistrust in relation to the nation's nuclear weapons and nuclear power programs. Hence, it is important for the DOE to begin by recognizing that many western states, and others, have been damaged and continue to be damaged by federal activities related to the nuclear age. Issues of trust may require long time frames to resolve and improve, so DOE must be committed to the effort. One means of sustaining trust will be ensuring that the process of siting a facility include all levels of government and draw expertise and resources from across all relevant agencies. States, Tribes, and affected local governments should be at the table from the beginning of the process. DOE should not only rely on their experts and fields of expertise but should also consult with other federal and state/tribal agencies who have local knowledge and expertise in fields relevant to site selection and operations. Storage of these materials is such a big deal that it behooves us to gather input from as many sources as possible to help ensure that decisions are backed by sound science and informed consent.

Informed Consent

General notions of informed consent require that the consenting party have sufficient information and time to consider their choices such that they can fairly appreciate the risks they are undertaking. In specific terms, this means providing resources for states and Tribes to perform independent inspections and technical audits of work related to the proposed CIS. This includes independent verification of technical data presented by federal regulators and their contractors. Because the expertise and counsel necessary to fully appreciate the risk of storage of high-level radioactive waste and spent nuclear fuel comes from sources that are generally

¹ Western Governors' Association Policy Resolution 2018-10: Transportation, Storage and Disposal of Radioactive Waste, Radioactive Materials and Spent Nuclear Fuel.

beyond the budgets of local governments and may be a significant burden on State and Tribal resources DOE should offer broad scope agreements to cover the costs of obtaining that expert counsel and data.

Transparency

The final broad area is transparency. While we recognize the need for confidentiality of certain aspects of the information used in the process (e.g., proprietary commercial design information), it will be necessary to involve the states, tribes, and other affected parties as much as possible throughout the process of developing a CIS. DOE must design a program that is accessible to public scrutiny to the greatest possible extent. The affected parties must be identified early in the process (although these parties will change over time) and be incorporated into the planning process.

Transportation Corridors

Every proposal to transport spent nuclear fuel to either a CIS or to a repository is vastly different from anything the US or indeed any other nation has done. The volume of waste proposed for transportation is vastly more than has been transported in the past. The suggested distance and mode of transportation is vastly different than has been done in the past. The social environment through which the waste will travel is also radically different than the past.

The problem of transportation is a technical and social problem that must not be taken lightly and should be considered as part of the siting process for any potential CIS. While consent from every locality through which shipments will pass may not be necessary or feasible local input should be considered along with state and tribal agencies responsible for regulating the identified routes and modes of transport. To ensure their participation and engagement the Section 180(c) program must be adequately funded to offset the expenses.

Respectfully,

A handwritten signature in black ink, appearing to read "Landry J. Austin". The signature is fluid and cursive, with the first name "Landry" being more prominent than the last name "Austin".

Landry Austin

Idaho Department of Environmental Quality
INL Oversight Program Manager
Vice-Chair, WIEB HLRW Committee

From: Bo Baggs
Sent: Saturday, February 5, 2022 2:05 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

Dear Sirs/Ma'am,

The most serious and inevitable risk if the U.S. Department of Energy were to take ownership of commercial highly radioactive nuclear waste before a permanent geologic repository opens: federal Consolidated Interim Storage Facilities would likely become Consolidated Permanent Surface Storage, that is, de facto Above-Ground Permanent Disposal, or Parking Lot Dumps.

Indefinitely long, to permanent, surface storage at federal CISFs would require active features. Loss of institutional control anytime over the next million years would mean the potential for catastrophic releases of hazardous radioactivity into the environment, which would harm people and other living things downwind, downstream, up the food chain, and down the generations, potentially out to great distances, depending on wind and water driven flow over long periods of time.

Indefinitely long, to permanent, surface storage at federal CISFs would remain dangerously accessible, risking unintentional/accidental, but nonetheless catastrophic, releases of hazardous ionizing radioactivity, as due to container degradation/failure over time, extreme weather disasters due to climate chaos, etc. However, intentional releases, as due to an act of war, terrorist attack, or sabotage, are also possible. So too is theft/diversion of weapons-usable materials, risking proliferation of nuclear weaponry or radiological dirty bombs.

Indefinitely long, to permanent, surface storage at federal CISFs would achieve only very short-term effectiveness, at best, compared to the hazardous persistence of irradiated nuclear fuel and highly radioactive waste. It would also result in intergenerational inequity, a form of environmental injustice.

Any legal authority for DOE to take title to and liability for commercial irradiated nuclear fuel at a federal CISF, in the absence of a permanent geologic repository, was very limited as to the quantity that could be stored there (1,900 metric tons), was for emergency purposes only, and expired more than three decades ago, in 1990. Federal CISFs would multiply the highly radioactive waste transportation risks, while accomplishing no increase whatsoever in the safety, security, health, or environmental protection associated with the storage of irradiated nuclear fuel.

I do not consent to any form of offsite interim storage. The waste should reside at the location where it was generated. Period.

Thank You For Accepting My Heartfelt Comments,

George S. Baggs, Father and Responsible Citizen

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From: Baker-Smith
Sent: Thursday, February 3, 2022 1:41 PM
To: Consent Based Siting
Subject: [EXTERNAL] Consent-Based Siting

We are very concerned that the U.S. Department of Energy is making plans to open highly radioactive waste consolidated interim storage facilities, under the ruse of "consent-based siting."

There are many and varied significant problems with this plan, among which are that federal CISFs would multiply the highly radioactive waste transportation risks, while accomplishing no increase whatsoever in the safety, security, health, or environmental protection associated with its storage.

Also, nuclear power should be phased out and abolished, so that no more highly radioactive waste will be generated. We need to stop making it in the first place. However for highly radioactive irradiated nuclear fuel (INF) that already exists, hardened on-site storage (HOSS), or hardened near-site storage, is the best interim measure, not CISFs. HOSS, or hardened near-site storage, is the preferred interim alternative, not CISFs.

And the continued targeting of CISFs at BIPOC (Black, Indigenous, People of Color) and/or low-income communities, already disproportionately burdened by pollution and hazardous facilities, is a violation of environmental justice principles. DOE, which itself has an infamous history of targeting Native American reservations for CISFs (previously called by other names, such as Monitored Retrievable Storage (MRS) sites, Independent Spent Fuel Storage Installations (ISFSIs), Away From Reactor (AFR) sites, etc.), must cease and desist from such environmentally/radioactively racist practices.

Federal CISFs would be a dangerous dead-end detour on the road to a scientifically/technically, and socially acceptable, repository. Federal CISFs would also constitute a radical reversal of long established U.S. policy, law, regulation, and court precedent, which has held the private owners of commercial irradiated nuclear fuel responsible for its interim storage, while the federal government (that is DOE, using both nuclear ratepayer and federal taxpayer funds) is responsible for permanent disposal.

We encourage the DOE to defend health, safety, security, the environment, and environmental justice, by pushing back against this latest bid to open dangerous, *de facto* permanent surface storage, parking lot dumps.

Thank you for your attention.
Gerritt and Elizabeth Baker-Smith

[REDACTED]

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From: Betsy Madru
Sent: Friday, February 25, 2022 11:32 AM
To: Consent Based Siting
Subject: [EXTERNAL] Deep Isolation Comments to DOE RFI Consent Based Siting for Federal Interim Storage Facilities
Attachments: Deep Isolation reponse to DOE RFI Consent Based Siting for Federal ISF pg no.pdf

Good afternoon-

Attached please find Deep Isolation's comments to the DOE RFI for Consent Based Siting for Federal Interim Storage Facilities. We look forward to the Department's efforts and are appreciative of the chance to provide input.

Thank you,
Betsy Madru

Betsy Madru
Pronouns: She, her, hers
Government Affairs

www.deepisolation.com



*Please follow us on social: [Twitter](#), [LinkedIn](#), [Instagram](#), [Facebook](#)
Watch this brief [video](#) to learn more about us.*

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February 25, 2022

Dr. Kim Petry
Acting Deputy Assistant Secretary for Spent Fuel and Waste Disposition
U.S. Department of Energy
Office of Nuclear Energy
1000 Independence Avenue, SW
Washington, DC 20585

Submitted via: consentbasedsiting@hq.doe.gov

Subject: Response to the U.S. Department of Energy's Request for Information regarding Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities

Dear Acting Deputy Assistant Secretary Petry:

Consent-based siting is an essential element of a successful nuclear waste management program in the United States. Credible and defensible scientific and technical work must go hand-in-hand with public participation and informed consent. Trust in the process is as critical an element as sound science.

Given Congressional appropriations to proceed with interim storage activities, the Department of Energy's Request for Information is logically focused primarily on that piece of an integrated waste management system. It would be advantageous, however, to foster an equally robust conversation in parallel about siting and licensing one or more permanent disposal facilities.

Deep Isolation appreciates the opportunity to respond to the Department of Energy's Request for Information on the design and implementation of a consent-based siting process for federal interim storage. We recognize that there has been significant research and thought leadership on the concept of consent-based siting and will briefly highlight some of this work as a backdrop for our answers to Questions 3 and 4 of Area 3: Interim Storage as Part of a Waste Management System.

The Bipartisan Policy Center (BPC) produced one of the first comprehensive reports on consent-based siting, entitled "Moving Forward with Consent-Based Siting for Nuclear Waste Facilities." This report summarized insights from experience with other hard-to-site facilities, as well as results from a survey designed to solicit the views of state officials on a range of issues related to siting nuclear waste facilities. The BPC report concluded with a series of recommendations for the implementation of a consent-based siting process, all of which should be incorporated into the Department of Energy's program going forward.

The Nuclear Waste Technical Review Board (NWTRB) also produced recommendations concerning consent-based siting in its April 2021 report, entitled "Six Overarching Recommendations For How To Move The Nation's Nuclear Waste Management Program Forward." Given the NWTRB's primary focus and mission is to provide technical and scientific peer review of the Department's nuclear waste

program, its recommendations related to openness, transparency, and engagement are noteworthy, particularly with respect to development of site suitability criteria and safety and licensing requirements early in the process of site selection and development.

Finally, academic research on consent-based siting has been pursued for several decades, with one of the more recent pieces done by Thomas Webler, entitled “Unpacking the idea of democratic community consent-based siting for energy infrastructure,” being especially relevant. Arguing that a re-orientation toward consent-based siting offers new opportunities for government and private parties to engage in collaborative planning with potential host communities in ways that promote energy justice, Webler also points out that consent-based siting must be preceded by a clear grounding in the theoretical history of the concept of consent in the areas of medical treatment, human subject research ethics, political theory, and international development.

The fundamentals of consent-based siting have been well-researched and reviewed, as documented in the BPC report, NWTRB report, and Webler research discussed briefly above. The remainder of these comments will concentrate on answering Questions 3 and 4 of Area 3: Interim Storage as Part of a Waste Management System.

Progress on establishing one or more permanent disposal facilities is critical to efforts to develop an interim storage facility. The so-called “linkages” in the Nuclear Waste Policy Act (NWPA) between interim storage milestones and repository milestones were included to provide confidence that both would proceed in parallel and that storage would not become de facto disposal. Over the last 10 years, these linkages have been seen by some as an obstacle to progress toward developing interim storage (utilizing the “monitored retrievable storage” authority in the NWPA) in the absence of moving forward with a repository at Yucca Mountain, and been seen partly to “blame” for the overall breakdown in the nuclear waste program. Another way to look at this, however, is to see it as a reminder of the fundamental need for an integrated waste management system that includes both interim storage and permanent disposal as was intended when the legislation was enacted.

If it is assumed that potential interim storage sites will be pursued using a consent-based process, then the hosts of those sites must have reasonable confidence that the sites will, in fact, be “interim” and not become permanent by default. The only way to maintain that balance and assurance is to have a robust integrated waste management system that includes both types of facilities as well as the accompanying safety and regulatory structure to enable success.

The importance of establishing a sound and defensible safety and regulatory structure for nuclear waste disposal cannot be overstated. New regulations for geologic disposal must be built on a solid technical foundation of safety analyses and performance assessments, and must establish regulatory certainty at the outset. This is not a ship that can be built as it sails. Clarity and certainty about the regulatory process will provide a necessary underpinning for conversations about the siting of disposal facilities. This will in turn provide greater confidence that interim storage will not become permanent and will allow more open dialogue with prospective host communities and states that is built on a platform of transparency and trust.

The process to establish new regulatory standards and regulations for geologic disposal must begin now, in parallel with efforts to site interim storage. The existing generic regulatory standards established under 10 CFR Part 60 are dated. Similarly, the site-specific regulatory standards for Yucca Mountain under 40 CFR Part 191 and 10 CFR Part 63 were put in place at a time when it was expected that Yucca

Mountain would be the sole location for permanent disposal. A robust stakeholder engagement process that is founded in geologic disposal standards internationally will ensure that the Department meets its goal of transparency, and that the public has meaningful opportunities for input, thereby instilling confidence in the entire campaign. Regulations do not need to be unique to the United States and the U.S. can learn from its peers around the world. Safe and secure are concepts that are scientifically proven and upheld everywhere in the world. There is an opportunity to learn from and work with colleagues, and also to gain trust from the community of stakeholders who are actively participating in other countries, such as Sweden and Finland. As a member state to the IAEA, the U.S. is well-suited to lean into these conversations and put lessons learned into practice.

Additionally, regulatory standards should be established based on the necessary safety requirements and not dictated by technology or repository design. This means if the performance assessment of a disposal facility can meet the requirements as set forth in the regulations, then the facility can obtain the license. This does two things: first, it opens the U.S. up for private innovation and consideration of multiple options for disposal design; and second, it gives the public confidence in the safety regardless of the technology. To use an analogy with auto safety, if a vehicle passes the Federal Motor Vehicle Safety Standards (which are already well established) it does not matter if the vehicle has two doors or four doors, is a sedan or SUV, or has a gasoline or electric engine. If the standards are based on solid science, then the public can have confidence in the standards because they were designed first and foremost with the public and safety in mind, and any technology or design that can meet them, can be put to market. This will allow free-market principles to drive creative and critical thinking, while at the same time give stakeholders assurance that regulations are not being written for any specific goal or design except what the science indicates is safe. Critical to success will be an open process to establish regulatory standards that seeks input from a diverse set of stakeholders and experts in professional societies, national laboratories, private and governmental entities, and other interested parties.

Finally, the Department of Energy should lay out a comprehensive plan for development of an entire waste management system that provides flexibility in the strategy and approach for storage, transportation, and disposal. An essential part of any fully integrated plan is continuation of generic work that will be required regardless of the final destination of the material, such as work being done under 180(c) of the NWPA to provide technical and financial training to local state and tribal public safety officials whose jurisdictions are on major transportation routes. Initiating a consent-based siting process for interim storage is an important first step of the Department's overall plan, but it must be developed against the larger backdrop of a comprehensive system that is grounded in sound science and built on a platform of public trust and confidence.

Sincerely,

A handwritten signature in blue ink, appearing to read "Rod Baltzer".

Rod Baltzer
Chief Operating Officer
Deep Isolation, Inc.

From: [REDACTED]
Sent: Thursday, March 3, 2022 12:47 PM
To: Consent Based Siting
Subject: [EXTERNAL] Submittal of Lake H. Barrett CBS RFI Comments 22-03-03
Attachments: Lake Barrett Response to DOE RFI Ltr Submitted 22-03-04.pdf

Dear Dr. Petry,

Please include my requested response in you system.

Thank you.

Lake H. Barrett

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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March 3, 2022

Dr. Kim Petry
Acting Deputy Assistant Secretary
for Spent Fuel and Waste Disposition
U.S. Department of Energy
Office of Nuclear Energy
1000 Independence Avenue, S.W.
Washington, DC 20585

Subject: Lake H. Barrett Response to DOE's RFI on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Fed. Reg. 68,244 (Dec. 1, 2021)

Dear Acting Deputy Assistant Secretary Petry:

This is in response to your request for information regarding how to move forward our Nation's currently stalled nuclear waste program. As discussed more fully in the attachment to this letter, I appreciate and support DOE's issuance of the Request of Information and outreach efforts to establish an integrated waste management system to support the advancement of nuclear energy to meet our nation's needs for safe clean and environmentally sound energy.

As I have been involved in DOE leadership positions in this area for over a decade, it is my opinion, that DOE must first address how to resolve state level political resistance to either disposal or interim storage facilities. The Nuclear Waste Policy Act (NWPA) attempted to balance state's rights and national needs considerations via the host state disapproval and Congressional override and second repository processes. Sadly, these processes have not been sufficient, thus the lawful and technically adequate Yucca Mountain repository is currently politically stalled. And the DOE has been unwilling to follow current law nor has it undertaken the hard political work to advance any revisions to the NWPA. And with Yucca Mountain unfunded, going nowhere, and with nothing else to replace it, there is no credible national disposal program such that any possible volunteers for interim storage is faced with an indefinite situation, which is likely insurmountable. Thus, a key aspect for a CBS interim storage program is the restoration of a workable credible geologic disposal program. Specifically, DOE should enter discussions with the State of Nevada and Congress to restore funding to complete the Yucca Mountain NRC licensing process, and in parallel pursue a second repository geologic disposal site with a Consent Based Siting process. If Yucca Mountain cannot be politically restarted, then the CBS second repository may then become the nation's first repository.

As described in the detailed attachment, DOE should also proceed in parallel with a Consent Based Siting process for an integrated interim storage facility.

This generation, who created our current nuclear waste materials inventory, has an intergenerational responsibility to overcome our current political issues and implement an integrated waste management disposal program immediately. Saddling our children and grandchildren with our spent nuclear fuel in dozens of temporary storage locations scattered across the country adjacent to our rivers, lakes, and seashores along with endless taxpayer financial liabilities for engineered storage is irresponsible. We need to act, and the time is now.

Yours sincerely,

Lake H Barrett

██████
████████████████████

Responses to Specific DOE RFI Questions

Area 1: Consent-Based Siting Process

1. *How should the Department build considerations of social equity and environmental justice into a consent-based siting process?*

Reach out with honest communications, listen to the communities' concerns, and dialog with communities about how partnerships can be mutually developed to address any concerns and advance whatever interests that the communities may need and desire. Working with communities to fulfil cultural needs, power sharing arrangements, educational development, benefits, and infrastructure enhancements are all mutual opportunity areas for an effective positive host-facility relationship.

2. *What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?*

Whatever role the community structure wishes them to have in a representative democracy. DOE should listen to all points of view and adapt through dialog and discussion.

3. *What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?*

DOE should provide information on what a possible interim storage facility would technically look like in a very general sense. It should also provide suggestions of what benefits and safety and environmental protection assurances could be provided if asked by the community. Colocation of other advanced research and development safety centers, educational partnerships, land utilization, and whatever topics a community might wish to have an interest in. DOE should be prepared to discuss whatever issues a community wishes to discuss.

DOE should be prepared to assist the community in exploring new governance and ownership arrangements other than DOE. An example might be the replacement of DOE with a joint venture public service corporation that includes host communities within the governance structure.

4. *What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?*

The lack of a credible geologic disposal program to eventually remove the stored radioactive materials for permanent disposal. DOE must provide a credible realistic disposal program that meaningfully proceeds in parallel to assure the community that the interim storage is truly "interim."

The involvement of the DOE organization, which has a varied history of being a dependable partner to achieve mutual success, is a barrier. DOE should be willing to work with the community to develop a replacement DOE organization with a community desired and better functional organizational ownership/governance structure. The goal would be to jointly propose the new structure to be included in the necessary amendment to the Nuclear Waste Policy Act.

5. *How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?*

Listen to what communities want and discuss with them how their needs for assurance can be achieved. Application of commercial contracts with host communities is a sustainable approach to address community schedule expectations. Appropriate contractual conditions, with compensatory actions for failures, is a approach to ensure that commitments are achieved in a manner that is satisfactory to the community.

6. *What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?*

DOE should listen to community views regarding organizations that should be involved. Non-aligned independent organizations, such as local or regional respected academic institutions, might be the most useful and trusted by the host communities.

Area 2: Removing Barriers to Meaningful Participation

1. *What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?*

Trust concerns are likely and honest and open communications with communities to listen, explain and inform will be critical. Anti-nuclear “no solution” groups will likely wage “scare” campaigns to try to intimidate local elected officials with biased part truth information to attempt to prevent or terminate meaningful discussions. DOE needs to enhance its communications capabilities to be able to withstand unfounded emotional political attacks with accurate and timely science-based information that is understandable to the public.

2. *What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?*

DOE should support reasonable requests from organizations that the community trusts and wishes to engage for independent support. This independent support should generally not be active nuclear nor anti-nuclear organizations. Such organizations may include colleges and universities, professional societies (e.g., ANS, ASME, HPS), and pragmatic environmental organizations that the community may be familiar with.

DOE should look to existing successful nuclear facility/host community relationships for guidance. Many commercial reactors have had decades of good relationship experiences with local and regional/state level hosts. It would likely be very beneficial for possible CBS interested communities to visit existing national and international nuclear facility communities to witness for themselves how positive hosting arrangements can be developed and operated.

3. *How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?*

Extensive outreach activities and financial support for interested communities to learn for themselves. Funding should be provided as soon as possible.

4. *How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?*

Emphasize possible new non-DOE partnership governance arrangements that can be adjusted to local, State and Tribal desires. DOE should leverage the range of benefits and power sharing possibilities available from the federal government to encourage State cooperation.

5. *What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?*

DOE needs to be able to explain what a general sense of the facility would be. Invite and take the community leaders, if they want, to see similar existing domestic and international nuclear facility sites. DOE should directly support communities and governments to have the ability and resources to develop their own information independently, rather than being forced to rely on federal government

experts or activists alone.

Area 3: Interim Storage as Part of a Waste Management System

1. *How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?*

Listen to interested communities about their concerns and desires. This of course has a sense of the past and well as the present. Regardless of the past and present, both the DOE and community want the future to be better with respect and social equity and environmental justice. Let the community start with what they believe would be a fair just approach for taking the next steps to consider some productive fair relationship. The potential host communities are in the driver's seat and DOE need to adjust to their views of equity and justice.

2. *What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?*

This solely depends upon the dialoging communities' desires. In general, the benefits of co-location of other desired facilities are all positive for everyone. The only drawbacks could be the loss of jobs at some other existing location or the potential increase in cost to DOE or whomever the responsible owner organization is.

3. *To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?*

Likely very much. How much, is in the view of the potential host community and how they assess the likelihood of the fuel being removed at an appropriate time. And their assessment of the sufficiency and sustainability of any commitments being provided, and the reliability of the actions stated if the commitments are not met.

Any created functional CBS Interim Storage arrangement will require a revision to the Nuclear Waste Policy Act. Traditional statutory changes alone may not provide the host community with sufficient protections as there is an unfortunate history, especially with Federal-Tribal agreements, where the Federal government did not perform as promised. Thus, additional community protections, such as those provided by commercial contracts, will likely be necessary. Exactly what these are will need to be jointly developed to the eventual satisfaction of the community.

4. *What other issues should the Department consider in developing a waste management system?*

The fundamental core of a national waste management program is passive safe and environmentally protective geologic disposal. Integrated interim storage is now a valuable addition to our overall waste management program because of the unfortunate significant political delays in implementing geologic disposal. An early initial Interim Storage facility closely coupled with a relatively near-term geologic disposal facility, provides an opportunity to divide functions in an integrated manner to better accommodate community desires with national needs. For example, some classical disposal functions could be shifted to the Interim Storage facility if the host community so desires the additional economic activity. Such functions could include:

- Manufacturing and installation of the engineered waste package (which was done in Sweden)
- Transportation equipment manufacturing, maintenance, and operations
- Confirmatory science and engineering functions for transportation safety, nuclear fuels development, nuclear materials recycling, and advanced materials manufacturing technologies.

DOE, in a dialog with interested communities, should be prepared to discuss locations of DOE sponsored Office of Science activities to be collocated with an Interim Storage facility. In addition, if the interested community is in the vicinity of an existing DOE cleanup site, then DOE should be prepared to discuss modifications to existing cleanup agreements to accelerate cleanup goals, if the community so desires.

From: Jeannette Bartelt
Sent: Wednesday, March 2, 2022 4:10 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Use the nucleus waste in the NEW Small Nuclear Power Plants, RECYCLE!!!

Sincerely,
Jeannette Bartelt

████████████████████
██████████ MD ██████████

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From: Patricia Beach
Sent: Friday, February 25, 2022 1:50 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

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2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
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5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Patricia Beach

[REDACTED]

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From: Sheila Bearry
Sent: Thursday, December 2, 2021 7:37 PM
To: Consent Based Siting
Subject: [EXTERNAL] Spent nuclear fuel storage

I think everyone in a situation like that should be able to have their say on whether or not to have it stored in or near their community in which they and their families live and work and go to school. I personally would not want any of that anywhere near me. Thank you for your time.

Sent from my iPhone

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From: David Weisman
Sent: Tuesday, February 22, 2022 2:50 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal Interim Storage - Comments of the Alliance for Nuclear Responsibility
Attachments: 022322 A4NR comments DOE RFI.pdf

To whom it may concern:

Attached please find a PDF with the comments of the Alliance for Nuclear Responsibility to the DOE RFI: Consent Based Siting and Federal Interim Storage.

Kindly contact us if there is any technical difficulty opening the document.

Yours truly,
DAVID WEISMAN
Outreach Coordinator

Alliance for Nuclear Responsibility



www.a4nr.org

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ALLIANCE FOR NUCLEAR RESPONSIBILITY

PO Box 1328
San Luis Obispo, CA 93406
(858) 337-2703
(805) 704-1810
www.a4nr.org

February 23, 2022

From: Rochelle Becker
Executive Director
Alliance for Nuclear Responsibility

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Via email to: consentbasedsiting@hq.doe.gov

RE: RFI: Consent Based Siting and Federal Interim Storage

Please find below the responses to RFI from the Alliance for Nuclear Responsibility.

Area 1: Consent-Based Siting Process

1. [How should the Department build considerations of social equity and environmental justice into a consent-based siting process?](#) First and foremost, the Department needs to engage in the congressional process needed to put into action a key, long-delayed recommendation from the Blue Ribbon Commission final report of January, 2021:

The overall record of DOE and of the federal government as a whole, however, has not inspired widespread confidence or trust in our nation's nuclear waste management program. For this and other reasons, **the Commission concludes that a new, single-purpose organization is needed to provide the stability, focus, and credibility that are essential to get the waste program back on track.** We believe a congressionally chartered federal corporation offers the best model, but whatever the specific form of the new organization it must possess the attributes, independence, and resources to effectively carry out its mission. [emphasis added]

In recent public forums (i.e., DOE presentation on Consent Based Siting provided to the San Onofre Community Engagement Panel, February 10, 2022) the DOE representative (Dr. Kimberly Petry) referenced on multiple occasions the need to solve the “back-end problem of waste storage” because new reactor development (to solve climate change) would be impeded until that question was resolved. Further, a presentative of the Nuclear Energy Institute was included in the panel discussion, and spoke of NEI’s alliance with DOE and echoed Dr. Petry’s thoughts with regard to new nuclear power development hinging on waste solutions.

An agency (DOE) whose mission includes the promotion and development of new nuclear energy sources cannot be trusted to equitably and justly provide a solution to the legacy problem of civilian nuclear waste accumulation. This bifurcation of “promotion” (or “advocacy”) versus regulation was addressed half a century ago in the federal decision to split the Atomic Energy Commission’s similar, dual, role and create the Nuclear Regulatory Commission exclusively for regulatory oversight.

Current communities where high-level, legacy civilian radioactive wastes are stored (that are not candidate sites for potential “new” nuclear reactors) want a solution **now**. Whether this solution has as its byproduct the ability to enable **new** nuclear power facilities is independent from their immediate needs, and further discussion of such potential only dilutes the pressing legacy concerns. It is logical to understand why such candidate communities might view with suspicion the current DOE’s exhortations on the need for new nuclear power (to address climate change) as encouraging an expedient answer to the waste storage dilemma, rather than delving with greater sincerity of thought into a legacy waste solution that is **just and equitable** when viewed in a longer, intergenerational context.

Until the DOE and congress can agree on this split role and create a new agency with the sole mission of solving the legacy civilian radioactive waste dilemma, potential host communities may rightfully view with skepticism whether the DOE is diligently serving **their** needs or acting in furtherance of the goals of the commercial nuclear power sector.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility? None, until these entities have reached out to their own communities for input (polls, public meetings, etc.) and can demonstrate that they have elicited all opinions/options from those that they claim to represent. **When** that has been achieved, the Department needs to hire representatives from any communities where waste storage potential meets “technical, geographical, and scientific standards” to sit in on all advisory panels that would craft this decision-making process.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites? “Benefits and opportunities” cannot be decided without first presenting to potential host communities a clear understanding of and analysis of the risks to the environment, real estate values, and health consequences that might arise.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed? The predominant barrier is DOE people coming into communities with a “we understand more than you do” top-down attitude and not completely disclosing why it has been so historically difficult to cite a permanent repository for over five decades.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities? First, the Department needs to license a **permanent repository**, thereby demonstrating that the “interim” storage will really be interim.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting? For a start, cease spending time (and resources) considering states that can or will never become a waste site (permanent or interim.) Secondly, stop returning to those same states (and/or others that may meet technical, geographical, scientific criteria) with the same old, and some new “we’re listening and we believe in consent” buzzwords and expect anyone to believe you (since the agency’s actions to date do not validate its actions).

7. What other issues, including those raised in the *Draft Consent-Based Siting Process* ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process? The Department cannot move forward without the full “consent” of Congress, so you might just start there.

Area 2: Removing Barriers to Meaningful Participation –

RESPONSE: Same answers as in AREA 1

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?
2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?
3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?
4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?
5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Area 3: Interim Storage as Part of a Waste Management System –

RESPONSE: Same answers as in AREA 1 and AREA 2

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?
3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?
4. What other issues should the Department consider in developing a waste management system?

From: Kathleen Bentley
Sent: Friday, February 25, 2022 8:54 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

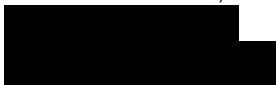
Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Kathleen Bentley



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From: David Bezanson
Sent: Sunday, February 6, 2022 3:48 PM
To: Consent Based Siting
Subject: [EXTERNAL] Fw: CONSOLIDATED INTERIM STORAGE FACILITIES - comments
Attachments: CONSOLIDATED INTERIM STORAGE.docx

Hi DOE Staff,

The above attachment of a Word file is hereby submitted for your consideration.
Thanks for studying this important issue.

David Bezanson, Ph.D.
US voter [REDACTED]

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CONSOLIDATED INTERIM STORAGE FACILITIES FOR NUCLEAR REFUSE

Comment submitted February 2022 by David Bezanson, Ph.D., US voter

DOE's proposal to create CISFs is inadvisable, hazardous, and shifts remediation expenses from private industry that own nuclear facilities to the federal government. These companies include nuclear utilities, research, and weapons manufacturers. Remediation costs should be borne entirely by private industry.

CISFs increase transportation emissions, which exacerbate climate change and morbidity and mortality from toxic co-pollutants. One of these, particulate matter from combustion of fossil fuels, causes about 340,000 premature deaths in the US annually. Transportation is the economic sector that emits more GHGs and airborne toxins than any other sector. Transport of fissile materials entails hazards of accidental spills, theft, proliferation, terrorism, and exposure of cargo staff to ionizing radiation. For a host of reasons, shipping nuclear refuse to foreign nations, for storage there, is unwise.

Use of on-site or proximal interim storage greatly reduces transport expenses and risks. These sites should be on land that is owned by the nuclear facility that created the fissile waste. Storage safety should be guarded by mandatory storage site guidelines developed by NRC and DOE. All expenses of constructing and maintaining these storage sites, including 24/7 security, should be paid by the company that generated the fissile trash.

If a permanent storage facility is established with the consent of the host state, the costs of constructing, maintaining, and transporting materials thereto should be borne in part by nuclear companies. Each firm should be required to pre-pay for a century of storage based on the number of tons of material they store. If a firm "cannot afford" this, then the refuse is to be temporarily stored on-site on their land, at the company's expense, until Chapter 11 bankruptcy proceedings have been settled to fund permanent storage.

To fund the construction and operation of a permanent storage facility, subsidies to and liability waivers from the federal government for nuclear firms should cease. The savings should be used for permanent storage.

Establishing CISF before a permanent repository is sited and constructed presents risk of the CISFs becoming permanent repositories. Site characteristics of a company's interim storage may be unfavorable. Many reactors are located near an ocean, so they may use seawater for continuous cooling requirements. However, as climate change accelerates, increased sea level rise is probable. During storms or tsunamis, this may damage storage containers and infrastructure – creating security and public health risks.

The plethora of multi-millenia risks, problems, and costs of reactors and spent fissile storage could be minimized by a cessation of accepting permit applications for new reactors. As the final section illustrates, in an era of climate change, renewable energy is a smarter solution to our energy needs than reactors. The DOE should reallocate its resources to accelerating the development of renewables instead of reactors.

ARE REACTORS CARBON-FREE AND ARE THEY MORE EFFECTIVE THAN RENEWABLES FOR REVERSING CLIMATE CHANGE?

The nuclear industry has declared that reactors are “zero-carbon” or “carbon-free”. Lobbying has led to regulatory and legislative capture that echoes this claim. Is it corroborated by scientific research?

Hundreds of studies have calculated carbon emissions over the lifecycle of nuclear reactors. There is a wide range of estimates of gCO₂/kWh. Research factors in mining, construction, dismantling, and fissile trash storage. There is no consensus on how to estimate C emissions from the last two stages. Thus, these emissions are underestimated or omitted. C emissions from the operating phase (after construction but prior to dismantling), including transportation, were not factored in (1, 2, 3, 4, 5, 6, 7).

LIFECYCLE ANALYSES OF REACTORS

Most lifecycle research concludes that reactors have C emissions comparable to that of renewables, e.g. PV solar and wind. Future research is likely to find the C emissions of reactors to be significantly higher for the following reasons. The vast majority of research was done in 2017 or earlier. During that time, the efficiency of wind and solar were significantly lower than in 2021. For example, the efficiency of PV solar was in the range of 15 to 19% prior to 2018. Currently, PV solar efficiency is 20 – 23% and is projected to rise to 30%.

Pre-2018 research was based primarily on the use of moderate grade uranium ore. Unmined deposits of this grade are becoming scarce worldwide. Low grade uranium is now the norm for use in reactors. This requires a significantly higher input of electricity to activate the fission reaction, i.e., enrich the uranium. Worldwide, about 65% of electricity is fossil fuel or biomass sourced – each having high GHG emissions. A popular technology for enrichment is uranium gas centrifuges, which are rotated at high RPM using mostly fossil-fuel-sourced electricity.

The reactor industry is unsustainable due to the diminishing global supply of moderate grade uranium and the reservation of high-grade for weapons manufacture. Eventually, the lifecycle carbon emissions of reactors will exceed that of fossil fuel power plants. Estimates for the likely date of parity, at the current global output of reactors, vary from 2070 to 2145 (1). This depends upon the magnitude of other uses of uranium, e.g., nuclear weapons and medical diagnostics; as well as the commercial use of other elements, e.g., thorium.

Most uranium used in US reactors is imported. Per the Energy Information Association, the largest suppliers were Canada, Kazakhstan, Australia, and Russia in 2019. Cargo transport over such long distances emits significant quantities of C. In contrast, US has nearly all of the materials used to manufacture US solar, geothermal, and wind equipment. 33% of uranium fuel rods require replacement with fresh enriched uranium every 18 to 24 months. All rods are replaced within 5 to 6 years. This periodic mining, enrichment, and replacement process entails significant amounts of transportation and GHG emissions – throughout the operating phase.

Reactors are typically refurbished every 40 years. This takes 2 to 4 years, during which time there is no electricity output. Restarting is done gradually over a period of several months at a low power output.

Water vapor, especially when combined with heat, is a GHG. Each reactor emits enough heat and water vapor to equal 4.4 gCO₂e/kWh. In contrast, solar and wind decrease heat and water vapor enough to remove 2.2 gCO₂e/kWh (7). Jacobson constructed a table contrasting the emissions of many energy technologies over 100 years (7).

Transportation of uranium, in non-operating phases, is factored into most research. However, no study was found that estimated the C emissions from transportation of workers (or uranium) during the operating phase of the lifecycle. According to an industry association, Nuclear Energy Institute, each utility scale reactor requires 500 to 1000 workers throughout the operating phase as of 2021. Let's consider the C emissions from transport of 500 workers. If the average round-trip commute is 12 miles and the average m.p.g. of vehicles is 12 (in commuter traffic), then one gallon of gasoline is burned. This emits 19 pounds of CO₂ per E.P.A. 19# x 500 workers = 9500# of CO₂/day. This equals 4.31 MT of CO₂e. If commuters work 240 days annually, the total is 1034 MT/yr. (Multiplying this times 95 reactors in the US has a product of 98,230 MT/yr.) Maintenance and security workers are needed 24/7. Factoring these into lifecycle analysis research would generate more accurate estimates of gCO₂/kWh.

As reactors age, they become less efficient. The ratio of energy output to input decreases while hours of maintenance rise annually. These factors increase C emissions per kWh (4).

Long term storage costs are frequently mentioned in the literature, but lifecycle research excludes estimates of emissions from this final stage. Due to the prolonged half-life of enriched uranium, safe storage is required for thousands of millenia. For the initial decades after reactor closure, the fissile refuse is stored on the reactor site in the reactor or in metal containers that are entombed in concrete. Manufacture of metals and concrete entails high energy inputs and C emissions. These multi-ton cylindrical coffins are oft set upon a concrete foundation surrounded by fencing. On-site storage requires security workers to be present, or monitoring from a remote location, continuously. This entails transportation emissions for millenia unless a permanent national repository is approved. For decades in the US, plans to transport the coffins to a permanent underground crypt have been proposed. No site has been approved because voters in each target state have rejected the dumping of radioactive garbage in their backyard. Transportation to a final resting place poses risks of accidents and spills. In addition, moving the heavy cargo is energy intensive, emitting copious amounts of C. Storage is very controversial and many MT of CO₂e are emitted annually due to the labors of policy makers, regulators, and NPOs to address this issue.

The most ambitious storage plans are being executed in Sweden. Excavation of tunnels 200 to 500 meters deep has begun, but none have been completed. This subterranean process is also energy and C intensive. There is no guarantee of the geologic stability of these subterranean

vaults for thousands of millenia. Until there are sound estimates of the C emissions from the storage phase, estimates of lifecycle emissions will be too low to allow accurate comparison with other energy technologies.

CLIMATE CHANGE

Nuclear reactors are a poor choice of energy technology during a period of accelerating climate change based on lifecycle CO₂e criteria. In addition, they are dirty, slow, and expensive. In contrast, renewables are cleaner (free of ionizing radiation emissions), can be built at utility scale within a few years (instead of 10 to 19 years for reactors), and generate electricity for less than one-fourth the cost of reactors. The NRC requires reactors to shut down when the ambient temperature is at least 100 F. Renewables can operate efficiently and safely at temperatures well above 100 F. Reactors require huge volumes of water for cooling. In contrast, renewables do not require water for cooling or operation.

Only reactors have an energy technology that presents risks of theft of fissile materials, proliferation of nuclear weapons, and being used as a dirty bomb by organized crime and hostile nations. Like other forms of dirty utility-scale energy generation, the lifecycle of reactors violates environmental justice. E.g., the mining, construction, operation, and demolition phases expose workers and proximal residents to many toxins including ionizing radiation. Though reactor failures are uncommon, a single failure can imperil public health, crops, and wildlife within a radius of hundreds of kilometers for decades (2, 5, 7, 8, 9, 10, 11, 12, 13).

To decelerate climate change, construction of new reactors has been proposed. The above considerations reveal that renewables are more effective and economic for rapid and safe scaling up of electricity generation and storage.

Others, some of whom object to new reactors, favor extending the lifespan of existing reactors. This should only be considered for reactors situated on sites that are distant from sources of new or existing renewable generation plants. If a reactor is in a microclimate that lacks sunlight, wind, geothermal sources, and ocean tides; extension is worthy of consideration. Replacing existing reactors with fossil fuel plants would accelerate climate change. So renewables, rather than fossil fuel generation, are the best replacement for reactor energy.

Site-specific hazards are critical to consider. Existing reactors on risky sites should be decommissioned promptly. These risks include tsunamis, flooding, sea level rise, a climate with many days annually that exceed 100F, landslides, proximity to airports, proximity to seismic fault lines, subduction zones, and locations on the shores of fresh-water bodies that are receding due to recurrent drought.

CONCLUSION

Renewables have numerous advantages over reactors while reactors have no advantages over renewables. Thus, no new reactors should be permitted. Instead, our energy resources should be focused on renewables which will more rapidly replace fossil energy (14, 15, 16, 17, 18, 19). More accurate research on the emissions and costs of multi-millenia storage should be completed before approving regulations and plans for CISFs or permanent storage.

Because the terms “carbon-free” and “zero-carbon” do not apply to reactors, it’s use should be discontinued – especially by scientists, government, and mass media. If the term “low carbon” is used for reactors, a comparison with other energy sources is required for this to be meaningful. Reactors do have low CO₂e emissions relative to fossil fuel energy sources. However, reactor emissions are higher than the emissions from renewables.

REFERENCES

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From: Edward Bielaus
Sent: Friday, February 25, 2022 9:00 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

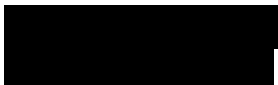
Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Edward Bielaus



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From: Jean
Sent: Tuesday, March 1, 2022 8:53 AM
To: Consent Based Siting
Subject: [EXTERNAL] Comments on Consent Based Siting

Jean Blackwood
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

I believe that the whole idea of consent based siting of nuclear waste is a non-starter. I don't believe any group of rational, well-informed people would willingly expose themselves and their future generations to the risks that go with having a nuclear waste dump in their backyard.

Some community members might be taken in by false promises of safety and big promises of money to fix their roads and improve their schools. This is a real danger, making our poorest communities most at risk of more dangerous substances in areas already plagued with environmental hazards.

Furthermore, consent from any such community raises the problem of no consent from dozens of communities exposed to danger as nuclear waste passes through or near their towns and rural homes. And this danger would be ongoing as reactors continue creating waste then asking taxpayers to take care of their mess.

The idea of so-called interim storage is rather ridiculous when we consider that we are no closer to finding any safe permanent repository for nuclear waste than we were 50 years ago. We currently *have* interim storage for nuclear waste mostly on the grounds of the privately owned for-profit corporations that created it, albeit with plenty of government subsidies to shore up their inability to actually earn a profit. The sensible path now would be to place that waste in the safest possible casks right where it is.

Why should the American people be asked to spend many millions more dollars for moving existing waste to another interim site? Why should they face the risk of this waste traveling on our highways and rail lines? Why should we all face the increasing danger of an enemy attack on such facilities not only at existing reactors but at large new interim dumps?

We are still paying for seemingly endless efforts to clean up Rocky Flats which only proves that we basically don't know how to clean up nuclear waste. As a wonderful woman said years ago "We are making tons of nuclear waste every year, but we don't yet know what to do with the first cup full."

I oppose plans to create any and all new interim sites for nuclear waste storage, whether near my community or any other.

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From: Ben Husch
Sent: Thursday, February 3, 2022 12:33 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: Consent_Based_Siting_RFI.pdf

Dear Principal Deputy Assistant Secretary for Nuclear Energy,

Attached, please find a [letter](#) from Idaho Representative Megan Blanksma and Hawaii Representative David Tarnas, Co-Chairs of the National Conference of State Legislatures Natural Resources and Infrastructure Committee in response to the Department's Notice of Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities. The letter is also signed by Tennessee Representative John Regan and Illinois Senator Mattie Hunter, Co-Chairs of NCSL's Nuclear Legislative Working Group.

Please contact NCSL staff, Ben Husch [REDACTED] and Kristen Hildreth ([REDACTED]) with any additional questions. Thank you

-Ben Husch

Ben Husch
National Conference of State Legislatures
Federal Affairs Advisor, Natural Resources and Infrastructure
[REDACTED] | [REDACTED]



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February 3, 2022

Dr. Kathryn Huff
Principal Deputy Assistant Secretary for Nuclear Energy
1000 Independence Ave. SW
Washington DC 20585

RE: RFI: Consent-Based Siting and Federal Interim Storage

Dear Assistant Secretary Huff:

The National Conference of State Legislatures (NCSL), the bipartisan organization representing the legislatures of our nation's states, territories, and commonwealths, appreciates the opportunity to provide information to the U.S Department of Energy's (DOE) in response to the Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities.

We urge the agency to reinstitute a process of a consent-based siting for the disposal of spent nuclear fuel and high-level radioactive waste, as based on the recommendations from the Blue Ribbon Commission (BRC) on America's Nuclear Future. NCSL has long supported efforts by both previous administrations and Congress to address issues that accompany spent nuclear fuel storage and high-level radioactive waste management.

While nuclear power is an integral part of a national energy plan, we recognize that issues including storage and disposal of spent nuclear fuel must be confronted. It has been a pillar of NCSL's Radioactive Waste Management policy that the siting of facilities for both interim storage and long-term disposal, be the result of a consent-based approach, and that it involve all affected levels of government, including state legislatures.

NCSL recognizes that the consent-based process in the United States is inherently unique, and as DOE proceeds with finalizing a process, NCSL strongly encourages the following:

The Role of State Legislatures

NCSL recognizes the need for DOE to develop processes that are efficient and effective to enable a constructive environment for these efforts. However, efforts to streamline this process do not necessitate overlooking the role of state legislatures in the process. A state's consent is best determined through its policymaking process which is conducted by the legislative branch and implemented by the executive branch. This allows for states to fully assess, from numerous viewpoints, various potential impacts of the creation of a nuclear waste repository and would ensure that the many interests and the voices of a state have a role in the process. Within DOE's RFI, the potential role of 'community' consent in the siting process is included throughout. NCSL believes 'community' should be further

defined to identify which aspects of local, tribal and state government should be involved in the siting process, while also outlining the roles varying levels of government play in the process. Most importantly, NCSL urges DOE to define “community” to ensure the state’s consent. Additionally, it is vital that state legislatures be explicitly named so the department remains consistent with the Nuclear Waste Policy Act of 1982, Section 117, which states the department “shall consult and cooperate with the Governor and legislature of such State.” Specifically, NCSL urges the department to include language in its finalized process specifying that the “presiding officer, or their designee, of each legislative chamber” be included with regards to site selection, study, and siting.” Presiding officers are not only elected by their constituents, but more importantly, by majorities of the elected officials of their legislative chamber.

Access to Resources to Ensure Opportunity

The federal government should both offer and make clear its determination to provide fair and equitable compensation to state, local and tribal governments of host states. NCSL supports federal funds for independent oversight activities by state executive and legislative branches so the host state may participate in and conduct its own assessments of a proposed waste repository site and disposal technology. The Nuclear Waste Fund should serve as the source for such nuclear waste management, with funds being isolated for developing permanent disposal and consolidated interim storage facilities. A lack of funding availability could significantly hamper a state’s willingness, and ability to begin, as well as continue, the consent siting process.

Transportation of Hazardous Waste

One additional item we urge DOE to consider as it moves forward regards the transportation of spent nuclear fuel and high-level radioactive waste. Should DOE proceed with developing a federal interim storage site, NCSL strongly urges the assurance of safe and reliable modes of transportation of radioactive wastes. DOE should seek to enter into a memorandum of understanding with each corridor state to spell out responsibilities, liability, compensation, response time, cleanup, shipping, planning, and other duties connected with emergency situations. State, local, and tribal governments should also be given both the funding and technical assistance, consistent with Section 180 (c) of the Nuclear Waste Policy Act, for ongoing emergency preparedness and should be involved in a meaningful manner with regard to all elements of the transportation system including radiation emissions standards, cask designs, and transportation equipment.

Additional Comments

Rather than establish a new federal entity, NCSL urges the creation of a public-private partnership to manage this back end of the nuclear cycle. Additionally, for any interim storage facilities that are approved, they should be licensed for a specific, limited period of time not to exceed 25 years.

NCSL has an extensive history of working on issues related to nuclear waste management and would welcome the opportunity to continuing to work with DOE.

Further details on NCSL's positions on consent-based siting can be found in NCSL's Radioactive Waste Management policy directive. Please contact NCSL staff, Ben Husch [REDACTED] and Kristen Hildreth [REDACTED] with any additional questions

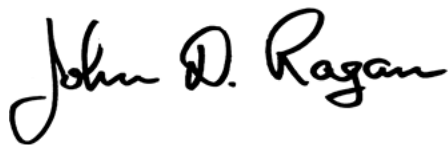
Sincerely,



Representative Megan Blanksma
NCSL Natural Resources and Infrastructure
Committee Co-Chair
Idaho House of Representatives



Representative David Tarnas
NCSL Natural Resources and Infrastructure
Committee Co-Chair
Hawaii House of Representatives



Representative John Regan
NCSL Nuclear Legislative Working Group
Co-Chair
Tennessee House of Representatives



Senator Mattie Hunter
NCSL Nuclear Legislative Working Group
Co-Chair
Illinois Senate

From: Bonnie Block
Sent: Thursday, March 3, 2022 12:28 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Bonnie Block



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From: Patrick Bosold

Sent: Thursday, January 27, 2022 7:25 PM

To: Consent Based Siting

CC: 'Patrick Bosold'

Subject: [EXTERNAL] Public comment on RFI for consent-based siting of nuclear waste interim storage facilities

Attn: U.S. Dept. of Energy team handling the RFI for consent-based siting of nuclear waste interim storage facilities

This is a public comment on your request for information on how to use a consent-based siting process to for Federal facilities for the temporary, consolidated storage of spent nuclear fuel.

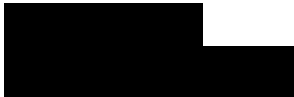
To use a consent-based siting process properly, you need to listen to the communities that are, or will be, targeted for nuclear waste interim storage facilities. Not the corporations trying to get rid of the waste, not the government agencies that have been captured by those corporations, and not the public officials who are acting in league with these corporations and government agencies. Listen to the communities where the nuclear waste will be stored. You can't call the process consent-based if the communities refuse to consent.

If it turns out that you cannot find a site for nuclear waste interim storage facilities due to opposition from the communities where such facilities are proposed, you have to honor that input and end the search for such sites.

That is how you properly use a consent-based siting process to site Federal facilities for the temporary, consolidated storage of spent nuclear fuel. The next step would be for the U.S. DoE to issue rules for on-site, dry-cask storage of nuclear waste until a permanent (NOT interim) storage facility is established.

Sincerely,

Patrick Bosold



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From: Matt Bowen
Sent: Friday, March 4, 2022 1:30 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: Nuclear_Waste_Final.pdf; NuclearWaste_CGEP_Report_011921.pdf

Center on Global Energy Policy at Columbia University SIPA
1255 Amsterdam Avenue
New York, NY 10027

[REDACTED]
[REDACTED] _____

March 4, 2022

Office of Nuclear Energy
U.S. Department of Energy
1000 Independence Ave. SW
Washington DC 20585

Subject: RFI: Consent-Based Siting and Federal Interim Storage

Dear U.S. Department of Energy Staff:

I appreciate the opportunity to provide a response to the U.S. Department of Energy (DOE) request for information (RFI) on how to site Federal facilities for the temporary, consolidated storage of spent nuclear fuel using a consent-based approach. I commend DOE for taking a step towards a broader consent-based approach to managing spent nuclear fuel, as recommended by the Blue Ribbon Commission on America's Nuclear Future in 2012.

First, the views expressed in this email and the attachments are my own views and not necessarily the views of anyone else at the Center on Global Energy Policy or Columbia University more generally.

Second, the attached documents (also linked below) contain discussions pertinent to several of the questions that DOE is asking for responses to, including Area 1, question 2; Area 1, question 3; Area 1, question 4; Area 1, question 6; and Area 3, question 3.

With regard to two questions in particular (Area 1, question 4; Area 3, question 3) an argument is made in both of the attached publications – and made many times elsewhere – that DOE should

really have an active program working towards disposal facilities (i.e., deep geologic repositories). Relevant to this RFI, the absence of such an effort can only make it less likely that a state will consent to a consolidated interim storage facility, worrying that without a future disposal facility the interim facility will not be so temporary. In addition, disposal facilities will be needed under all plausible future directions of the U.S. spent nuclear fuel management program.

With regard to Area 1, question 6, there have been local governments that have been willing to host storage and disposal facilities for spent nuclear fuel in the past, but in those cases opposition has arisen from elected officials at the state level. For that reason, DOE should endeavor to engage with state-level organizations such as the National Governors Association and the National Conference of State Legislatures on how best to design its consent-based program.

Thank you for the opportunity to provide comments.

Matt Bowen, PhD
Research Scholar
Center on Global Energy Policy
Columbia University SIPA

Web link for the first attached report:

<https://www.energypolicy.columbia.edu/research/commentary/nuclear-waste-policy-actions-117th-congress-and-biden-administration>

Web link for the second attached report:

<https://www.energypolicy.columbia.edu/research/report/forging-path-forward-us-nuclear-waste-management-options-policy-makers>

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NUCLEAR WASTE POLICY ACTIONS FOR THE 117TH CONGRESS AND BIDEN ADMINISTRATION

BY DR. MATT BOWEN
JANUARY 2022

Introduction

In the 117th Congress, the United States Senate is evenly divided, 50-50, between the two major political parties, and the margin for control of the US House is small. One nonpartisan—and overdue—policy issue that Congress and the executive branch could focus on is the US nuclear waste management program. The US is currently paying billions to utilities to house spent nuclear fuel (SNF) at operating and shutdown facilities, and high-level waste (HLW) remains at former nuclear weapons complex sites around the country. Add to this the potential for greater future reliance on nuclear power in a decarbonizing economy, and the need to finally get a handle on managing radioactive waste is clear.

An earlier report from the Center on Global Energy Policy on the US nuclear waste management program examined larger structural changes that the federal government could pursue to help the program make progress, such as fixing the funding mechanism and updating regulatory standards.¹ This commentary discusses the US program as it stands in the 117th Congress and proposes a series of comparatively smaller actions that could be considered and perhaps pursued on a bipartisan basis in the next few years.

Reasons to Rethink the US Program

Yucca Mountain in Nevada was named in the amended Nuclear Waste Policy Act (NWPA) of 1982 as the only location in the United States where commercial spent nuclear fuel could

This commentary represents the research and views of the authors. It does not necessarily represent the views of the Center on Global Energy Policy. The piece may be subject to further revision.

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be disposed. However, the State of Nevada has opposed that decision for decades, and its congressional delegation has successfully prevented any appropriations for the repository since 2010. Quite apart from the stalemate over Yucca Mountain,² there have been a variety of developments since the Nuclear Waste Policy Act of 1982 was signed into law that argue for rethinking the US approach to nuclear waste management.

Progress on the Disposal of Some Defense Waste

The Waste Isolation Pilot Plant (WIPP) in New Mexico, a deep geologic repository for long-lived transuranic waste from defense activities, opened in 1998; the WIPP provides an alternate template—one whose development involved negotiations with the host state—for how to successfully site, license, and deploy a nuclear waste repository.

Emergence of Climate Change as an International Imperative

While concerns about climate change have existed for decades, they only gained urgency in recent years: national governments declared the objective of limiting temperature increases to well below 2 degrees Celsius in the Paris Accords of 2015. In recent years, numerous US states have passed clean energy standards requiring their power sectors to decarbonize by roughly midcentury, and certain major utilities have committed to reaching zero carbon by the same timeline. These actions have contributed to the recent relicensing of some existing nuclear power plants, some of which may operate out to 80 years. The private sector and the US government have also made substantial investments in advanced reactor development to create dispatchable zero-carbon options that address energy and environmental challenges. The continued operation of the existing fleet and any new reactors will produce long-lived nuclear waste that will require disposition.

Advancements of Other Countries' Commercial SNF Disposal Programs

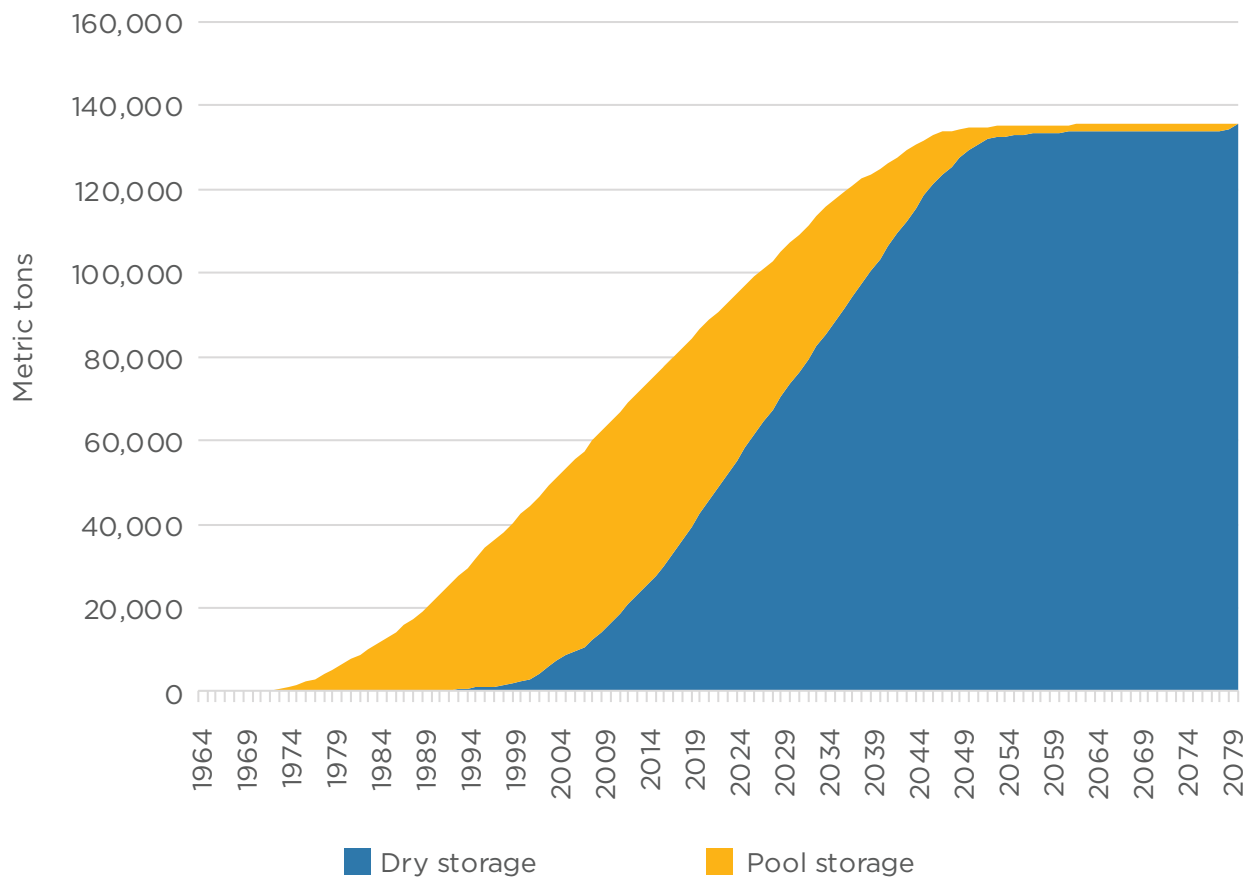
Other countries have made greater progress than the United States in spent fuel disposal, including Finland, which is now building a deep geologic repository after pursuing a consent-based approach where the local government voted in favor of the project. This contrasts with the top-down approach detailed in the 1982 NWSA where the federal government selected a site on its own. Finland, which expects to begin disposal operations in the next few years, would be the first country to dispose of commercial SNF anywhere in the world. That facility at Onkalo would provide an opportunity for state and local officials in the United States to visit an operating geologic repository to better judge for themselves the risks and benefits of hosting such a facility. Canada is within a few years of selecting a location to focus its repository efforts on, and like Finland it also pursued a consent-based approach to siting its repository rather than the top-down approach the United States took through the NWSA.

Prevalence of Interim Storage Facilities at Existing US Nuclear Power Plants

After SNF is removed from reactors, it generates so much heat that active cooling is generally necessary for about three years (and standard industry practice is to keep SNF in actively cooled pool storage for at least five years).³ US nuclear power plant sites were originally built with limited pool storage as it was expected that the SNF would be sent off-site for

reprocessing after a short period of time. But this did not happen in part because of the falling price of uranium, which made reprocessing less economic, and also because the United States changed its policies on reprocessing in the 1970s due to nonproliferation concerns. In consequence, the storage pools ultimately approached their designed storage capacities. When that occurred, however, the older SNF had already cooled sufficiently to be removed from the pool and placed in dry, air-cooled storage systems (i.e., “dry casks”). The practice became common, and—in the absence of a disposal facility—the amount of SNF in dry storage canisters now rivals the amount in pool storage, with the former projected to dwarf the latter in a few decades, as shown in Figure 1.

Figure 1: Cumulative SNF in pool storage or dry storage with projections to 2080



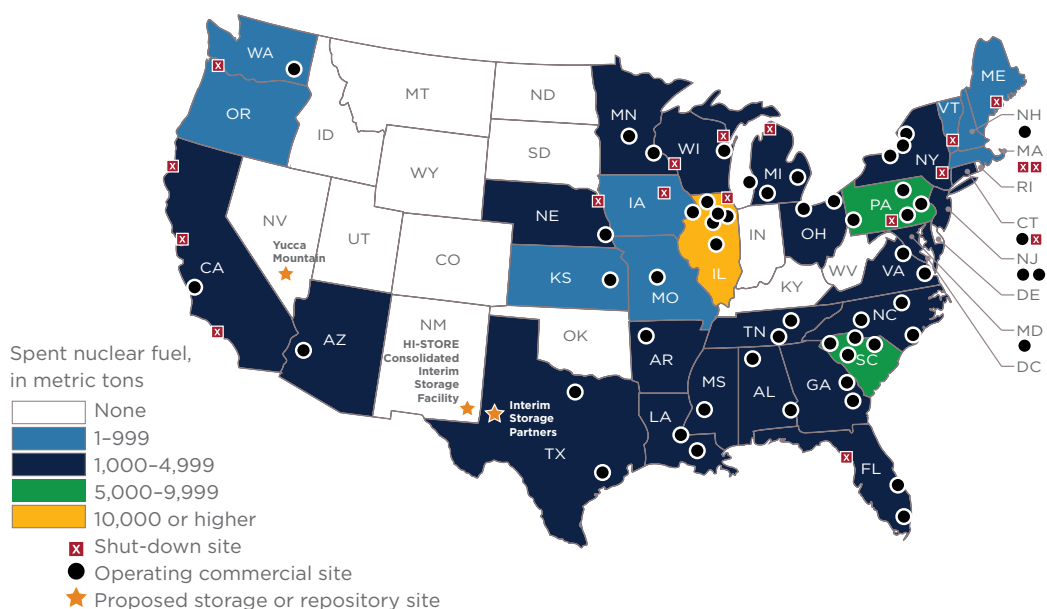
Source: SRNL, “Spent Fuel and Reprocessing Waste Inventory,” FCRD-NFST-2013-000263, Rev. 7, September 2020.

The different temporary canisters used at nuclear power plants were not designed for long-term disposal in any geological environment per se, but it would be preferable—if possible—not to have to open the casks to transfer the SNF into canisters specifically designed for disposal. Doing so would incur additional costs (e.g., from buying new disposal casks and paying for equipment and workers to carry out the transfer) and potential operational risks (e.g., the potential for radiation exposures to workers performing the transfer). Therefore, the Department of Energy’s (DOE) 2000s-era concept of removing SNF from pool sites and placing it directly into canisters designed for transportation and disposal will need to be reevaluated for the large and growing amount of waste already in interim storage casks. Research is underway to determine whether the SNF in them could be disposed of in certain geologic repository environments.⁴

Cost of Broken Federal Contracts with Utilities

At the end of 2019, SNF was stored at 75 operating or shutdown commercial nuclear power plant sites (as shown in Figure 2). Because of the federal government’s failure to take possession of the waste in 1998, as required in federal contracts with utilities operating nuclear power plants, utilities have been successfully suing the federal government for hundreds of millions of dollars a year to pay the costs of interim on-site storage. The projected federal liability is tens of billions of dollars.

Figure 2: Stored commercial spent nuclear fuel amounts, through 2019, and locations, as of June 2021



Source: Government Accountability Office, “Commercial Spent Nuclear Fuel: Congressional Action Needed to Break Impasse and Develop a Permanent Disposal Solution,” September 2021.

A Stable Defense Waste Inventory

The reactors at Hanford that were producing plutonium for the US nuclear weapons program were shut down in 1987, largely bounding what had been a growing defense waste inventory, except for the metric ton or two that US aircraft carriers and submarines still produce each year. A US government strategy to pursue disposal of defense waste first⁵ would thus be able to work with essentially a fixed inventory, simplifying planning, as opposed to the commercial spent nuclear fuel inventory, which is increasing each year by roughly 2,000 metric tons.

Uneven Progress in Processing Nuclear Waste at Defense Sites

Some defense-generated waste inventories could be disposed of with relatively little additional processing, while other inventories may need many years or decades of treatment. For example, there have been extensive delays in vitrifying liquid high-level waste at the Hanford Site in Washington, calling into question when that particular inventory may be ready for disposal. The repository plan for Yucca Mountain had commercial and defense waste mixed together in disposal areas, but the nonavailability of some defense wastes could make this type of approach difficult to achieve for repositories in general.

Possible Signs of Movement

Some developments in the 117th Congress point to the possibility of restructuring the US approach to SNF management. In July 2021, a bipartisan group of representatives formed the Spent Nuclear Fuel Solutions Caucus to address the challenges of commercial SNF remaining at shuttered power plants (also called “stranded” fuel and sites).⁶ Two months later, the GAO issued a report finding that congressional action was needed to break the impasse on SNF management because changes to the law are needed for the program to make progress.⁷

Additionally, Congress included \$20 million in appropriations for fiscal year (FY) 2021⁸ for consolidated interim storage efforts—that is, consolidating some of the temporary canisters at a single site. Part of the \$20 million was to go toward identifying such a site using a consent-based approach, though Congress did not define what “consent-based” meant. The appropriations also directed the DOE to continue site preparation activities at shutdown nuclear power plant sites and undertake transportation coordination efforts.

A consent-based approach to identify a site for federal interim storage aligns with Energy Secretary Jennifer Granholm’s comments about revisiting recommendations of the Blue Ribbon Commission on America’s Nuclear Future (BRC) for nuclear waste management.⁹ Most recently, on November 30, 2021, the DOE issued a request for information to seek input on a consent-based siting process to identify sites to store commercial SNF.¹⁰ Consolidated interim storage could provide the US with a variety of strategic advantages—both monetary and nonmonetary¹¹—including the following:

- allowing local communities to fully reclaim the land at shutdown power plants. This would also eliminate security-related site costs, reducing overall costs for maintaining many separate SNF storage facilities as compared to one consolidated site. This



type of consolidation appears to have broad support: the standard contract that utilities have with the DOE mentions the possibility of prioritizing acceptance of SNF from shutdown sites, which was recommended by the BRC. Two bills from the 116th Congress—the Nuclear Waste Administration Act of 2019 (S. 1234) and the Nuclear Waste Policy Amendments Act of 2019 (H.R. 2699)—contain the same prioritization.

- helping the federal government meet its commitments under the NWPA and, in the process, reducing taxpayer liability of hundreds of millions of dollars a year, paid out of the US Judgment Fund.
- providing time for additional cooling of SNF, while preserving disposition options for the future.

As of December 2021, it is unclear how the DOE will proceed with the \$20 million that Congress has appropriated for consolidated interim storage efforts. The DOE could, for example, announce a funding opportunity, making money available to state, local, and tribal entities to study the risks and benefits of hosting a consolidated interim storage facility. The DOE could also take a more unorthodox approach and simultaneously solicit views from nongovernmental organizations that have been historically skeptical or even opposed to nuclear power on how best to proceed.

Perhaps most importantly, the DOE could solicit input from—and offer funding to support associated research at—state-level organizations such as the National Governors Association (NGA) and the National Conference of State Legislatures (NCSL) on how best to approach state governments. Historically, some local governments in the United States have been in favor of hosting nuclear waste storage and disposal projects, but in those limited cases, hesitation, concern, or outright opposition has come from the state level. This by itself argues for engaging organizations such as the NGA and NCSL on what programmatic elements could increase the chances of a state getting to a position of at least nonopposition to a local government deciding to move forward with such a project.

However, regardless of what consent-based provisions the DOE proposes in order to involve state, local, and tribal entities in the development of consolidated interim storage facilities, federal law (i.e., the NWPA) contains a number of relevant restrictions that will limit progress absent congressional action. Most immediately, the NWPA¹² does not permit the DOE to construct a consolidated interim storage facility until the Nuclear Regulatory Commission (NRC) has issued a license to construct a repository. Since the NRC has not issued a repository construction license, Congress has—through its 2021 appropriations—effectively directed the DOE to begin work on a facility it is not legally allowed to construct absent a breakthrough in the repository program or a change in law.

Apart from the legal prohibition, the absence of a federal government effort writ large to develop a disposal capability is probably more problematic. Reports in the past decade have noted that, in general, the US nuclear waste management program does not appear to be moving toward the end goal of a geologic repository,¹³ as recent appropriations bills have directed the DOE waste program to perform only generic research and development (R&D) related to disposal and repositories with no funding related to siting a new repository.¹⁴ Given

this lack of progress, states will likely be more hesitant to accept a consolidated interim facility on their land, worrying that “interim” will become long term if there is no final disposal site. For example, in July 2021, members of the New Mexico congressional delegation, along with the state’s governor, sent a letter to Granholm opposing consolidated interim storage of SNF in New Mexico, citing the lack of a permanent disposal capability.¹⁵ Texas Governor Abbott sent a letter to the NRC opposing consolidated interim storage in his state in part on these grounds, and Texas later passed a law that attempts to block these facilities.¹⁶

Does Congress actually want the executive branch to search for a new repository? Congress has not directed the DOE to do so through appropriations or other laws, and action will be needed elsewhere in multiple executive branch agencies (requiring funding from Congress in all cases). The Environmental Protection Agency (EPA), for example, will need to promulgate new, modern generic regulations that will apply to future repositories before much if any work can be done at any sites to assess their suitability. Here, Congress could choose to direct the EPA to produce these new regulations—or choose to prevent the EPA from doing so.

One area that the DOE has the authority to move forward on is siting repositories solely for disposal of defense-generated SNF and HLW. Section 8 of the NWPA provides authority for the president to find that such a repository is necessary, and President Obama made the requisite determination in 2015.¹⁷ In this context, the DOE could begin a consent-based siting process for a geologic repository solely for defense waste. However, when the Obama administration undertook an initiative in this direction, the Armed Services committees denied funding for the effort. The Senate committee expressed a variety of concerns, including potentially higher costs and impacts on discretionary defense funds.¹⁸

A repository for defense waste would accommodate the removal of defense-generated nuclear waste from sites currently hosting it, allowing those sites to finish their environmental cleanup efforts. The government is required to remove spent naval reactor fuel from an Idaho facility by 2035, according to an agreement between the state, the DOE, and the US Navy. A successful defense waste repository would also provide another demonstration of deep geologic disposal of long-lived nuclear waste in the United States (as the WIPP has) but for HLW and SNF. This demonstration could potentially increase the likelihood that a state would consent to host a repository facility for commercial SNF and HLW disposal in the future.

Actions for the Federal Government

Absent a broader decision by Congress with respect to additional repositories, smaller actions not requiring changes in law are outlined in this section, should lawmakers or the DOE seek more immediate options for advancing US nuclear waste management and disposal efforts.

Action 1: Publish a finalized consent-based siting plan for nuclear waste management facilities that includes an integral role for consolidated interim storage.

The DOE publishing a consent-based siting plan prior to seeking expressions of interest or issuing requests for proposals for consolidated interim storage would help clarify the role of such facilities in the broader system.



The Obama administration released a high-level strategy report with public input in 2016 on managing and disposing of SNF and HLW,¹⁹ after which the DOE issued a draft document²⁰ outlining design principles for an effective consent-based siting process that included the prioritization of safety, environmental responsibility, regulatory requirements, recognizing Indian tribes' special trust relationship with the US federal government, environmental justice, informed participation, voluntariness/right to withdraw, transparency, and more.

Along these lines, the 2021 GAO report cited earlier included a recommendation that the DOE finalize this draft consent-based siting process. The draft had not been finalized due to changes in administration, but DOE officials told the GAO they were planning to resume work and complete the effort in 2022, pending an initial request for public input.

Senate bill S. 1234 from the previous Congress (mentioned earlier with regard to prioritizing waste acceptance)²¹ would have required a new siting process to begin and would have removed restrictions on site-specific work on a second repository, restrictions that are currently contained in the NWP. S. 1234 would have created a new organization whose sole purpose would be nuclear waste management and would require it to produce a “mission plan” for the development of both storage facilities and repositories.²²

When the DOE first published a mission plan with similar objectives in 1985, it assessed that an integral role for consolidated interim storage “would significantly improve system operations and the timely implementation of system functions.”²³ However, following the 1987 amendments to the NWP, which annulled the DOE’s selection of Oak Ridge in Tennessee for a consolidated interim storage facility and further constrained such efforts, the DOE’s program plans ultimately moved away from consolidated storage as a part of its integrated waste management system. For example, when the DOE published its final environmental impact statement for the Yucca Mountain Project in 2002, the plan was for SNF assemblies to be shipped from commercial sites directly to the repository.²⁴

Based on current realities (e.g., the use of dry cask storage at plant sites, the number of shutdown sites, and the lack of current disposal capacity), the DOE could prepare a new waste management system plan that clarifies the value of consolidated interim storage for SNF from shutdown reactors. The FY2021 appropriations bill language expresses congressional intent to prioritize moving SNF from shutdown reactors.

A finalized siting plan could also include an estimate of the additional costs that consolidated interim storage would entail (such as those incurred from needing two SNF transportation campaigns: first from shutdown reactors to the consolidated interim site and then from the latter to a repository site), weighed against the long-term savings achieved by reducing storage and security expenses through consolidation (in addition to any nonmonetary benefits). Given the legal constraints described earlier, the plan would likely need to note statutory changes that are necessary for the plan to be carried out as envisioned.

Action 2: Evaluate alternative approaches for repository development and operation.

A number of developments in the last two decades warrant revisiting the assumptions underlying the actual development and operation of a repository.

The increasingly large amounts of commercial SNF that reside in temporary dry storage casks was not envisioned in 1982. As discussed earlier, questions remain about whether such casks could be disposed of at a particular repository site without repackaging into disposal canisters, which would involve additional costs and operational risks. And given the delays in vitrifying high-level waste at Hanford,²⁵ there are uncertainties about when and how many defense HLW canisters will be available for codisposal with defense SNF standard canisters.

There are also ongoing debates over whether commercial SNF should be retained as an energy resource where the remaining fissile material could be recycled for additional energy production. There are also questions as to whether there are technically feasible and potentially preferable disposal alternatives to mined repositories (e.g., borehole disposal, discussed in Action 3).

With respect to repository development in general, there has been an evolution in thinking over the last several decades toward a phased, adaptive, and stepwise approach, as recommended by the National Academies²⁶ and the BRC, rather than an approach with set decision points fixed in congressional statute, such as the NHPA. As an initial step, the DOE could prepare a report that identifies and evaluates alternative approaches for disposing of SNF and HLW, including a phased repository development (described in the DOE's *Draft Plan for a Defense Waste Repository*) and concepts for the disposing of different types of waste in separate parts of a commingled repository. The latter could allow for decoupling the timing of defense and commercial waste emplacement (described in the DOE's *Assessment of Disposal Options for DOE-Managed High-Level Radioactive Waste and Spent Nuclear Fuel*).

Action 3: Institute a robust R&D program on alternative disposal technologies.

Although the DOE announced its decision in 1981 to develop mined geologic repositories for radioactive wastes, it also mentioned examining disposal under the seabed and in very deep holes as potential backup technologies.²⁷ Mined geologic repositories became the main thrust of the US program, but revisiting the other options with a robust R&D program could prove fruitful.

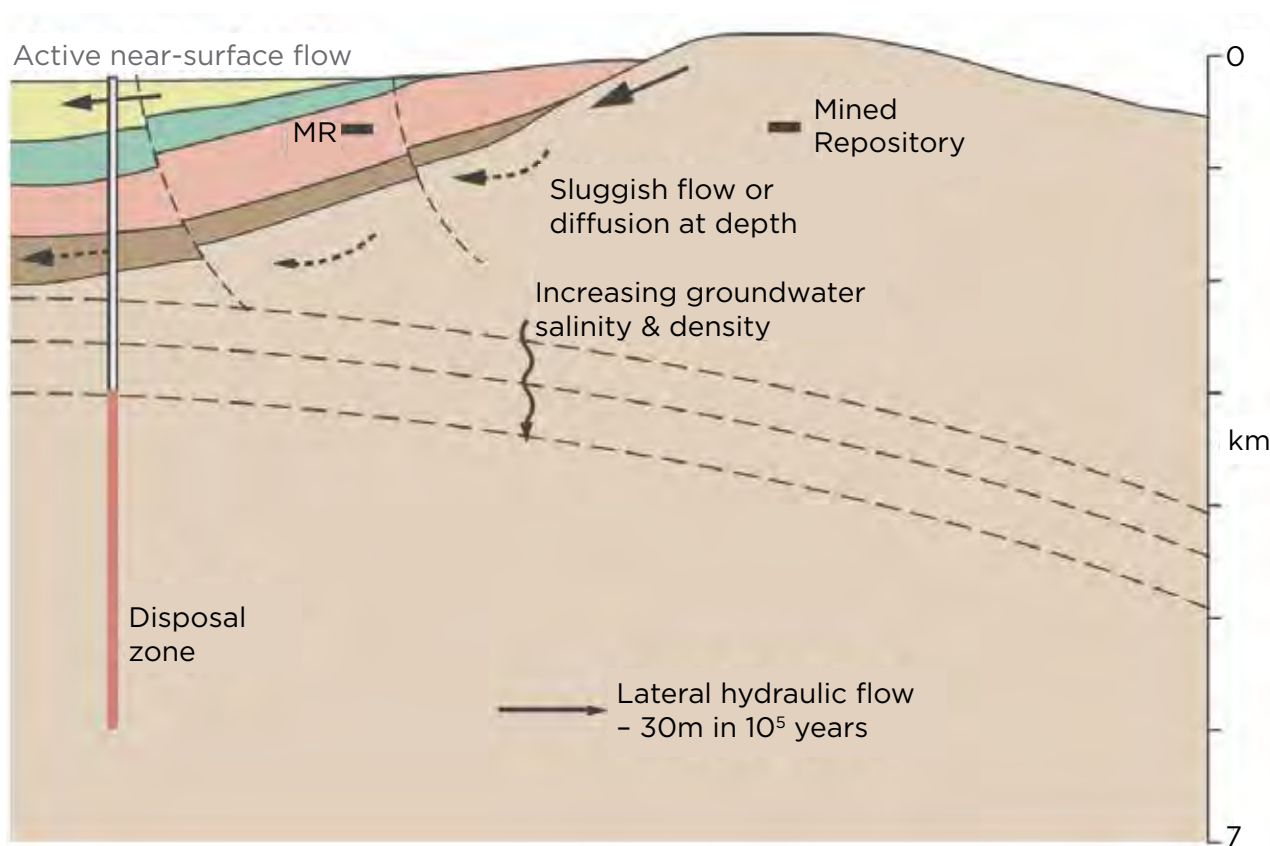
The report on the Senate Energy and Water Development FY2020 appropriations bill directed the DOE to use R&D funding to prepare a report on “innovative technological options” for the disposition of high-level waste and spent nuclear fuel.

Studies have identified boreholes as promising alternatives to repositories constructed from conventional mining techniques.²⁸ There are a number of attractive features for deep borehole disposal, including a prevalence of stable underground geologies that could accommodate



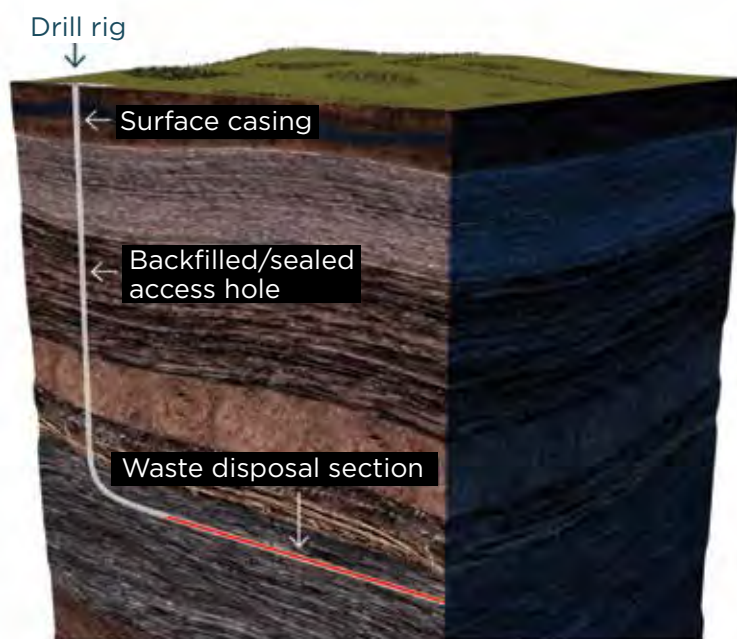
deep boreholes and the dense, salty water at these greater depths (as opposed to fresh groundwater resources at shallower depths) that would limit the possibility of radionuclide mobility to drinking water.²⁹ The width of drilled boreholes limits the size of the disposal packages,³⁰ but several small DOE-managed waste forms could be immediate candidates for borehole disposal.³¹ Two externally created diagrams showing potential borehole configurations are provided in Figures 3 and 4.

Figure 3: Vertical borehole concept



Note: The disposal of nuclear waste in deep boreholes would take place several kilometers below the earth's surface—at much greater depths than mined repositories. The lateral movement of water is substantially slower at these depths than movement at mined repository depths.

Source: Blue Ribbon Commission on America's Nuclear Future, "Report to the Secretary of Energy," US Department of Energy, January 2012.³²

Figure 4: Horizontal borehole concept

Source: Deep Isolation.

The DOE could plan for and pursue a robust R&D program to further investigate borehole disposal approaches. This work began during the Obama administration, but a field test planned for North Dakota—despite it not involving actual nuclear material—was met with local resistance and ultimately canceled.³³ Research on boreholes was largely ended during the Trump administration. Should the Biden administration wish to restart the program, the North Dakota experience indicates that local and state government support would be critical to successfully conduct future field tests.

Boreholes may also be ripe for international R&D collaboration: they are being examined as a nuclear waste disposal option in countries such as Australia, China, Germany, South Korea, and the United Kingdom.³⁴ Dozens of other countries have nuclear power programs, and some that don't still have research reactors for basic science, medical, and industrial isotope production, resulting in a much smaller inventory of waste that nonetheless requires proper disposal.

Action 4: Create an integrated plan for developing transportation capabilities to move SNF away from shutdown reactor sites.

Some of the technical and institutional capabilities for transporting SNF away from reactor sites are known and needed regardless of when, where, and what types of facilities the SNF will be shipped to. Knowledge of the end destination is not necessary to do at least some of the planning for a transportation campaign and to develop needed capabilities. The Senate report on the FY2021 Energy and Water Projects appropriations bill called for, among other things, “accelerating the development of a transportation capability to move spent fuel from its current storage locations.”³⁵

The DOE has already been examining shutdown sites to identify infrastructure upgrades that may be needed to remove the SNF³⁶ and is also progressing toward design and development of railcars to meet the American Association of Railroads’ requirements for spent fuel transportation.³⁷

To ensure readiness to the degree possible before having a defined destination, the DOE could prepare a plan that integrates a broader set of issues, including the following:

- estimating the costs and lead time to procure sufficient hardware (railcars and transportation overpacks).
- completing the list of infrastructure upgrades needed at shutdown sites.
- continuing planning work (including total cost estimates for SNF removal) at shutdown plants, beyond the six sites already studied by the DOE.³⁸
- engaging with the governments of states hosting shutdown sites, as well as the four state regional groups³⁹ that each have programs dealing with nuclear waste transportation issues, on route readiness and estimated funding for training⁴⁰ state, local, and tribal transportation officials.
- identifying a process for considering and responding to the transportation-related recommendations of independent groups including state regional groups,⁴¹ the BRC, and the National Academies.⁴²

This advance planning could help enable the initiation of pilot-scale operations of a storage facility for spent fuel from any of the shutdown sites, as well as provide decision makers insight on how best to begin the SNF acceptance process.

Action 5: Study and facilitate the potential transfer of responsibilities to a new waste management organization.

For decades, reports have noted that a separate organization solely focused on nuclear waste management would have implementation advantages over housing the US SNF and HLW waste management program within the DOE.⁴³ There are steps that the DOE could take now to inform the potential creation of such an organization.

The department could charter a joint National Academy of Sciences–National Academy of Public Administration⁴⁴ panel to provide analysis on the possible structural details and statutory foundations of a new organization. Their report could examine experiences inside the United States with federal entities not responsible for nuclear waste disposal implementation (such as the Tennessee Valley Authority and the NRC) and those outside of the United States that do have such duties (e.g., the single-purpose entity created to manage nuclear waste in Canada). The report could include statutory, regulatory, cultural, and organizational measures related to achieving higher levels of transparency, public trust, and successful implementation of SNF repository siting elsewhere in the world by single-purpose organizations as an input to congressional deliberations.

The DOE could otherwise develop a plan for reconstituting an office solely dedicated to the development and implementation of a robust waste management program, as the Office of Civilian Radioactive Waste Management was for several decades,⁴⁵ with an eye toward transferring that office’s responsibilities to a new single-purpose organization outside of the DOE once established. A recent letter from eight organizations urged Secretary of Energy Granholm to establish an office within the DOE that would report directly to her and be dedicated to “developing and managing an integrated nuclear waste storage, transportation, and disposal program.”⁴⁶ The physical office space could even be separate from current DOE buildings as a small step toward building a separate identity and different work culture.

Conclusion

Management of US nuclear waste is not a Democratic or Republican issue—states with nuclear power plants went blue and red in the 2020 elections. Idaho, South Carolina, and Washington have differing political environments, but all of them have defense-generated HLW at DOE sites in need of a disposal pathway. The tens of billions of dollars in federal tax liability from the broken contracts with utilities for failure to take possession of commercial SNF with no geologic repository to house it affects Republican and Democratic taxpayers.

Additionally, with the Biden administration’s goal of the US emitting net-zero greenhouse gases by 2050 and greater government funding targeted to advanced nuclear reactor R&D, decarbonization efforts that involve nuclear power will only reinforce the need to get a handle on nuclear waste disposal. The actions suggested in this report could help the 117th Congress and Biden administration take the first steps toward restructuring the US nuclear waste program, a timely and nonpartisan issue demanding attention.

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for a license to construct a monitored retrievable storage facility at such site.” This would seem to imply that “site-specific activities” involve technical evaluations that could be used to support an NRC license application. Similarly, section 145(d) states: “Site specific activities and selection of a site under this section shall not require the preparation of an environmental impact statement under section 102(2)(C) of the National Environmental Policy Act of 1969 [42 U.S.C. 4332(2)(C)].” This could support an interpretation that “site-specific activities” are earth disturbing in some way that might then require an environmental impact statement. In any case, the legal interpretation of “site-specific activities” would appear to place limits on what the DOE can do under current law with respect to beginning a search for a second repository. If the DOE’s legal interpretation of “site-specific activities” is not overly restrictive, it could still allow for actions such as seeking expressions of interest from state, local, and tribal entities or publishing requests for information for answers from the same groups as initial activities at the beginning of a consent-based process. (Nothing about those two actions would, for example, involve technical or physical work at specific sites.) And nothing about the NWPA would appear to prevent the DOE from conducting educational campaigns directed at state, local, and tribal officials, which could include trips to the WIPP repository in New Mexico, the Onkalo repository in Finland, and other international projects to give those officials an informed view of the risks and benefits to hosting and operating such facilities.

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FORGING A PATH FORWARD ON US NUCLEAR WASTE MANAGEMENT: OPTIONS FOR POLICY MAKERS

BY MATT BOWEN
JANUARY 2021

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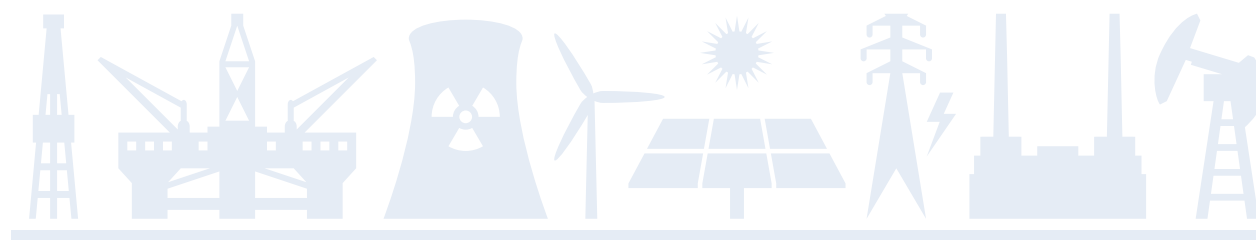
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FORGING A PATH FORWARD ON US NUCLEAR WASTE MANAGEMENT: OPTIONS FOR POLICY MAKERS

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EXECUTIVE SUMMARY

Nuclear power is considered in many countries a critical facet to maintaining reliable access to electricity during a global transition to low-carbon energy sources. One challenge to its potential in the United States, however, is the current standstill regarding a disposal pathway for spent nuclear fuel (SNF) from commercial reactors. This impasse has a negative bearing on nuclear energy's ability to supply more zero-carbon electricity and may cost US taxpayers tens of billions of dollars in government liability for failing to meet contractual obligations to take possession of the waste from utilities.

Despite the scientific community assessing that commercial SNF and other high-level radioactive waste (HLW), such as from defense activities, can be safely isolated in deep underground repositories, US efforts to license and operate one have flatlined. The original plan for siting at least two repositories for such waste was abandoned first by DOE and then by Congress. Yucca Mountain in Nevada was designated in law as the nation's sole potential disposal site by Congress in 1987, fomenting the state's opposition to the project. As a result of that opposition, Congress has not funded the project since 2010.

Still, progress has been made over the last few decades in nuclear waste disposal programs in countries such as Finland, Sweden, and Canada. And the United States has seen the successful opening and operation of the Waste Isolation Pilot Plant in New Mexico to dispose of generally less radioactive but long-lived transuranic nuclear waste from defense activities. Such programs offer insights for how the United States can try to resolve the challenges with commercial nuclear waste disposal and potentially alleviate one obstacle to wider adoption of nuclear energy to decarbonize the US economy.

This report, part of wider work on nuclear energy at Columbia University's Center on Global Energy Policy, explains how the United States reached its current stalemate over nuclear waste disposal. It then examines productive approaches in other countries and a few domestic ones that could guide US policy makers through options for improving the prospects of SNF and HLW disposal going forward, including the following:

- **Create a new organization whose sole mission is nuclear waste management (and whose approach is consent based).** Since the 1970s, reports have noted that a single-purpose organization would have a number of advantages over a program residing within DOE, which has multiple missions and competing priorities. Accordingly, Congress could pass legislation to create a separate nuclear waste management organization that has full access to needed funding and employs a consent-based approach to achieve greater support from state and local communities for the siting of facilities.
- **Improve the funding structure of the US nuclear waste program.** The program was supposed to be self-financing, with owners of nuclear power plants paying into a Nuclear Waste Fund that would cover the costs of management and disposal. However,



due in part to budget laws enacted in the 1980s and 1990s, a lack of access to needed funding has arisen. If the first option of creating a new organization is not achievable in the near-term, Congress could at least improve the waste program's funding structure.

- Pursue disposal of US defense waste first.** There could be greater public acceptance for the disposal of defense-related waste over commercial waste due to the national security missions involved and patriotic sensibilities. Momentum in one area of waste management could lead to the overall program's advancement, as a successful endeavor for defense waste disposal would inform and encourage commercial waste efforts. Nuclear waste from the defense sector also has some technical characteristics—the inventory being bounded, smaller, cooler, and with less potential for reuse—that may argue for its disposal ahead of power plant SNF.
- Prepare for a large-scale transportation program.** To date, the transportation of nuclear waste has been very safe. However, there are additional steps the federal government could take to prepare for the eventual larger-scale transportation campaign of SNF to either a consolidated interim storage site or a geologic repository. Such options include amending the Nuclear Waste Policy Act to allow states to recover the full costs of planning and operations for transportation across their borders and ensuring an independent regulator has authority over the transportation regime to strengthen public confidence in the program.
- Update generic regulatory standards for future geologic repositories.** There are two sets of US regulatory standards for SNF and HLW disposal: one for Yucca Mountain and one for all other sites. The Environmental Protection Agency, Nuclear Regulatory Commission, and DOE could resolve inconsistencies between regulations and ensure that new generic regulations for future disposal facilities are flexible enough to cover novel approaches (e.g., deep boreholes).
- Negotiate an agreement with Nevada on Yucca Mountain.** The US government could pursue, concurrent with new siting efforts, negotiating an agreement with Nevada to investigate, for example, the disposal of a more limited waste inventory at Yucca Mountain. Nye County, which is where the site is located, sees a disposal facility there as potentially safe and is interested in the associated economic development. Nevada's long-standing concerns regarding the project would have to be addressed to gain broader public support within the state.



INTRODUCTION

The risks associated with a continued accumulation of greenhouse gases in the Earth's atmosphere have focused the world's attention on moving to low-carbon energy options.¹ Of these, nuclear energy was 10% of world electricity generation in 2019 and 19% of US electricity generation.² Nuclear power plants emit no carbon dioxide (CO₂), and their power is accessible on demand; therefore they could play a key role in addressing climate change.³ Partly for these reasons, nuclear energy has received renewed international attention around possible construction of new plants or at least extending the lifetime of existing ones so they are not retired and replaced with CO₂-emitting fossil fuel plants.⁴

But concerns about nuclear energy remain, particularly on what to do with the radioactive waste in the fuel rods used for generating electricity. To date, no country has permanently disposed of commercial spent nuclear fuel (SNF), though some have made greater progress and are closer to a disposal solution than the United States. Finland is the current international leader on this front: it is in the process of constructing what would be the world's first operating geologic repository for commercial SNF.

In the United States, the national program for disposing of nuclear power plants' spent fuel has ceased to make progress.⁵ While nuclear energy remains the largest source of low-carbon electricity in the United States (with hydropower and wind energy each generating 7%, and solar plants producing 2% in 2019),⁶ the waste management standstill has a negative bearing on nuclear energy's promise. For example, several states have laws prohibiting new nuclear power plants until additional progress is made on managing nuclear waste.⁷ The lack of a pathway for waste is also one of the focal points of activist groups opposed to nuclear energy.⁸

This report will explain the origins of nuclear waste—commercial power and beyond—and how the United States arrived at its current stalemate, focusing on key events in the 1980s. Beyond the predicament's negative bearing on nuclear energy as a resource to address climate change, the impasse has created tens of billions of dollars in taxpayer liability in the form of broken contracts between the federal government and utilities. In addition, it has meant that communities hosting decommissioned reactors are unable to fully reclaim all of their land, as licensees must continue to maintain and protect the remaining storage facility.

But a fair amount has changed since the United States first structured its nuclear waste program in 1982 that points to a potential path forward. Other countries have moved ahead with their nuclear waste programs and the United States stands to benefit from those nations' experiences. Another key development has been the opening of the Waste Isolation Pilot Plant (WIPP) in New Mexico in 1999, which has disposed of defense-generated transuranic⁹ (TRU) nuclear waste for two decades. This facility offers an opportunity for US state and local officials to visit an operating geologic repository to see for themselves the risks and benefits to hosting such a facility. It also presents proof that the United States is capable of certifying, constructing, and operating a facility deep underground for disposal of long-lived nuclear waste—and, importantly, is able to maintain long-term community support for the program.



Transportation will be a key part of an integrated US nuclear waste management program, including the shipping of commercial SNF to either a consolidated interim storage facility or to a geologic repository. This report focuses on two transportation case studies: defense-generated TRU waste shipments to the WIPP site in New Mexico and the shipment of spent naval reactor fuel to the Idaho National Laboratory (INL). It also examines evidence that commercial SNF has already been safely transported in the United States and around the world. If transporting SNF is done according to the high standards in US regulations governing transportation of radioactive materials, the risks can be lower¹⁰ than those of other hazardous materials shipped around the country on a daily basis. As the report observes, however, various social and institutional challenges to a broader US program for transporting commercial SNF should be addressed prior to initiating a large-scale campaign.

Current US nuclear waste laws and regulations have proved problematic for effectively managing high-level waste (HLW) from defense projects and SNF from commercial and defense activities.¹¹ This report lays out a concrete set of options—including elements of legislative proposals from recent years—for Congress and the Executive Branch to consider as part of a path forward on managing nuclear waste. Some prominent options include creating a new organization whose sole focus is nuclear waste management (as opposed to housing it within the Department of Energy [DOE], which has many missions); improving the funding structure for the US nuclear waste program; pursuing the disposal of defense-generated nuclear waste first; planning for a large-scale SNF transportation campaign; updating older, generic regulations pertaining to future geologic repositories; and making an effort to negotiate a legally binding agreement with Nevada to address the state's concerns about a potential repository at Yucca Mountain.



II. THE HIGH-LEVEL WASTE AND SPENT NUCLEAR FUEL CHALLENGE

A. Origins: Power Plants, Weapons, Research, Isotope Production, and Naval Reactors

Several entities and efforts create nuclear waste in the United States, including commercial nuclear power plants, the US nuclear weapons program, reactors for research and isotope production, and naval reactors that power US submarines and aircraft carriers. This section provides a brief description of each.

Defense-related activities have generated massive quantities of high-level radioactive waste and about 2,200 metric tons of heavy metal (MTHM¹²) of SNF.¹³ During World War II, the Manhattan Project was launched in secret to develop a nuclear weapon, and the project led to the first detonation of a nuclear explosive device in 1945.¹⁴ The United States followed two paths to making material suitable for use in nuclear weapons: the enrichment of uranium in the isotope U-235 and the production of plutonium. The latter involved irradiating uranium fuel in a reactor and chemically processing it to recover plutonium. These operations lasted for decades and produced millions of gallons of radioactive wastes, of which about 90 million gallons of liquid wastes are currently being stored at Hanford, Washington, and Savannah River, South Carolina. The liquid waste inventory is in the process of being solidified for ultimate disposal, including as HLW.¹⁵ DOE estimated in 2016 that cleanup of the former weapon production sites would cost \$257 billion and the effort would last for decades.¹⁶

Following World War II, the United States also pursued development of nuclear reactors to power US Navy vessels. The USS *Nautilus* was the world's first nuclear-powered submarine, commissioned in 1954 before completing its first trip in 1955. About 45 percent of the navy's major combatants are nuclear-powered: 11 aircraft carriers and 68 submarines.¹⁷ There are currently 97 naval reactors in operation, including land-based facilities.¹⁸ Nuclear-powered navy vessels generate about 1 to 2 metric tons of spent nuclear fuel each year, and the navy projects that it will have 65 metric tons of SNF by 2035.¹⁹ Naval spent fuel is currently being stored at the Naval Reactor Facility at the Idaho National Laboratory.

In 1957, the Shippingport Atomic Power Station was connected to the electrical grid in western Pennsylvania as the first US commercial power reactor. Over 100 US power reactors started operations in the subsequent decades, though orders peaked in the 1970s and waned afterward. Originally, it was thought that SNF from commercial power reactors would be reprocessed, though, for a variety of reasons, including proliferation concerns and low uranium prices, initial efforts to deploy commercial reprocessing were abandoned in the United States. As a result, SNF inventories have been accumulating at reactor sites, and power plants began to move their SNF into air-cooled casks as their cooling pools filled up.²⁰ In 2019, commercial nuclear reactors produced about 19% of the electricity in the United States, and over half of its low-carbon electricity generation. At the end of 2019, the US commercial spent nuclear fuel inventory was 83,831 metric tons—put together it would fit on a single football field at a depth of less than 10 yards—and it is increasing by about 2,000 metric tons each year, making it the largest part of the collective US SNF and HLW inventory.²¹ In November of



2020, 94 commercial nuclear reactors were licensed to operate in the United States.²²

Finally, research and test reactors are used in research, industrial, and medical applications. The US Nuclear Regulatory Commission (NRC) regulates about 31 research and test reactors in the United States, primarily at universities, that have power ratings much lower than commercial reactors.²³ These reactors generate a small but nonnegligible amount of SNF that DOE manages. For example, the High Flux Isotope Reactor at the Oak Ridge National Laboratory in Tennessee began operations in the 1960s and today, among other things, supports fusion energy research and produces californium-252, an isotope used for cancer therapy and detection of pollutants in the environment and explosives in luggage.²⁴ Reactor-produced radioactive isotopes²⁵ are used in millions of medical procedures each year in the United States—around 20 million procedures in 2005 alone.²⁶ The isotope molybdenum-99, produced in reactors in several countries, is widely used for diagnostic imaging.²⁷

The United States also operates the Foreign Research Reactor Spent Nuclear Fuel Acceptance Program to accept spent fuel from research reactors in other countries. In support of national security and nonproliferation missions, the program repatriates SNF from reactors that operate on US-origin highly enriched uranium (greater than 20% enrichment in the isotope uranium-235) and returns it to the United States. As of 2012, this inventory of SNF totaled about six metric tons.²⁸

All of these activities—the production of plutonium for nuclear weapons, the operation of nuclear-powered naval vessels, the generation of electricity from nuclear power plants, and isotope production from research and test reactors—create nuclear waste that must be properly stored and disposed of. Table 1 shows projected inventories of SNF and HLW over the next several decades, though the amount of commercial SNF will depend upon future reactor operation (e.g., how long nuclear plants operate). Some of the isotopes that make up SNF and HLW have long half-lives (e.g., on the order of millions of years) and thus must be separated from the biosphere for correspondingly long periods of time.

Table 1: Projected amounts of US nuclear waste requiring disposal by DOE

Inventory	Metric tons
Commercial SNF	141,423
DOE-managed HLW from the nuclear weapons program	11,655
DOE-managed SNF from the nuclear weapons program	2,195
DOE-managed commercial SNF	240
DOE-managed commercial HLW	139
DOE-managed navy SNF	65

Note: DOE also manages a small inventory of SNF from its test and experimental reactors, university reactors, government research reactors, fuel from some foreign research reactors, and others. The defense HLW has been converted to metric tons under the assumption that one HLW canister is equal to 0.5 metric tons of heavy metal. DOE has custody of SNF from the Fort St. Vrain and Three Mile Island reactors.

Source: GAO, “Nuclear Waste: Benefits and Costs Should Be Better Understood before DOE Commits to a Separate Repository for Defense Waste,” January 2017, table 1.



However, US efforts to dispose of SNF and HLW have foundered. Events in the 1980s—particularly in 1982, 1986, and 1987—help explain the challenges facing the US nuclear waste management program today.

B. The Nuclear Waste Policy Act of 1982: A National Compromise Abandoned

Before DOE was created, the Atomic Energy Commission (AEC) operated from 1946 until it was abolished in 1974. The AEC's original plan was not to dispose of SNF but rather the HLW resulting from the reprocessing of SNF.²⁹ The AEC did make some unsuccessful attempts to site geologic repositories for HLW disposal,³⁰ but for the purposes of this report, the actions most relevant for explaining the challenges the United States faces today originated in laws passed in the 1980s and decisions principally made at DOE.

The Nuclear Waste Policy Act of 1982

In 1979, a DOE-led Interagency Review Group on Nuclear Waste Management³¹ recommended that repository sites for SNF and HLW disposal be identified in multiple geologies and regions of the country. A series of congressional hearings and draft bills followed, culminating in the passage of the Nuclear Waste Policy Act of 1982 (NWPAct).

The NWPAct was a careful compromise amid concerns from western states, environmental groups, and industry. In particular, the NWPAct required the federal government to identify two sites to potentially host repositories—the first by 1987 and the second by 1990.

To ensure there would in fact be a second repository, a cap of 70,000 MTHM was placed on the first repository until the second one was opened.³² The intent of having at least two repositories was for geographical equity, to minimize the cost of and impact of transportation, and to prevent one state from having to bear the full burden of the nation's nuclear waste disposal challenge. It was widely anticipated (though the NWPAct did not require it) that the first site would be in the West³³ and the second in the East.³⁴

The NWPAct laid out a timetable for the characterization of potential sites and selection of the first and second repositories. For example, the president was to recommend to Congress the first site by March 31, 1987, and the second site by March 31, 1990. It also authorized DOE to enter into contracts with utilities to take commercial SNF by 1998 in exchange for a fee on nuclear power generation of 0.1 cents/kWh that was to be paid into a new Nuclear Waste Fund (NWF), the intention of which was to shield the American taxpayer from these costs. The secretary of energy was required to perform an annual assessment of the fee and to recommend changes if needed to assure full cost recovery.

Section 8 of the NWPAct directed the secretary of energy to arrange for one or both of these repositories to also take defense-generated nuclear waste, unless the president explicitly determined that a separate repository for defense waste was needed. The evaluation was to consider cost efficiency, health and safety, regulation, transportation, public acceptability, and national security. Such a defense-only repository would still be subject to the full NRC licensing requirements, as well as the state/local/tribal participation, consultation, and



financial assistance provisions that the NWPA required for a commercial repository.

DOE concluded that it would save on the order of \$1.5 billion by comingling defense and commercial waste—otherwise finding no other factors that distinguished the two cases.³⁵ President Reagan accepted these conclusions and made the requisite determination for codisposal in 1985.

The NWPA originally allowed for monitored retrievable storage (MRS) facilities, known more commonly today as “consolidated interim storage facilities,” to be constructed and operated by DOE as part of a waste management system. These facilities would involve above-ground storage of SNF in containers designed to passively cool the fuel and provide shielding from the SNF’s radiation. In 1985, DOE recommended that a site in Oak Ridge, Tennessee, be converted into a temporary storage facility.³⁶ DOE had also considered two other sites in Tennessee for MRS purposes and concluded that an MRS facility in the state “would significantly improve the performance of the nuclear waste management system.”³⁷ DOE identified the Clinch River site in Tennessee as its preferred site for a variety of reasons, including that it was owned by the federal government. In January of 1986, the governor of Tennessee notified the secretary of energy that he opposed the MRS project because he considered it unnecessary and thought it would have a detrimental effect on industrial recruitment, economic expansion, and tourism in the Knoxville–Oak Ridge area.

By law, the secretary of energy was to nominate five sites for the second repository by July 1, 1989. As part of the work building toward nomination, DOE had been investigating granite and crystalline rock in 17 states in the upper Midwest and Atlantic coast. However, when the secretary released preliminary rankings of promising rock formation in seven states in January of 1986, he drew intense opposition from these eastern states. The repository siting process envisioned by the NWPA unraveled soon after that.

The Reagan Administration Suspends Work on a Second Repository

In May of 1986, Secretary of Energy John Herrington announced that DOE had narrowed the candidate sites for the first repository in the West from nine to three: Hanford in Washington, Deaf Smith County in Texas, and Yucca Mountain in Nevada. Secretary Herrington also announced that DOE was deferring indefinitely the search for a second repository. The Congressional Research Service noted³⁸ that although Herrington’s stated reason for putting off a second repository was the lower growth projected for nuclear power, candidates for the first repository saw it as the Reagan administration bowing to political pressure from eastern states and that the decision “unraveled a key regional compromise in NWPA.”

The Reagan administration’s determination that a second repository was not needed ran contrary to the NWPA: there was no requirement or even authorization for the Executive Branch to determine whether a second repository was needed. In fact, the law was unambiguous that there was to be a second repository, which was part of the grand compromise in 1982.

Members of Congress from eastern states that were under consideration for the second repository expressed enthusiasm and approval for the Reagan administration’s decision, while



others accused the administration of bowing to political considerations, including midterm elections and Vice President George Bush's potential run for president two years later.^{39,40}

The reaction from elected officials representing western states, as well as others, was unsurprisingly quite different than reactions in the East. In a US House of Representatives hearing⁴¹ held two months after the announcement, various members of Congress from the West voiced their displeasure with the Reagan administration's decision. Representative Mo Udall (D-AZ) criticized the administration for repudiating the essential compromise between eastern and western interests that allowed the NWPAA to be passed and accused the administration of deferring the second repository round to help with the midterm elections in 1986. Representative John McCain (R-AZ) agreed that the NWPAA would not have been passed without the second repository as an integral part of the legislation. Representative Barbara Vucanovich (R-NV) observed that Nevada might have to accept all of the nation's HLW with no assurances that Yucca Mountain was the safest site in the country and a worry that the cap of 70,000 metric tons in the NWPAA would simply be lifted at a later time when it became "politically convenient to do so." Representative Beau Boulter (R-TX) noted that people did not believe that the process had been carried out fairly and in accordance with the law and that the indefinite postponement of the second site destroyed the concept of regional balance.

The deferral of the search for a second repository was not a partisan issue—it had both bipartisan support and bipartisan opposition.

The 1987 Amendments to the NWPAA

Following the Reagan administration's announcement that it was suspending efforts on a second repository, members of Congress then amended the NWPAA to legislatively postpone the siting of the second repository indefinitely.

Governor Bryan of Nevada called the legislation under consideration "little more than a blatant attempt to ram the repository down the throat of an unwilling State, which most informed parties conclude would be Nevada...Nevadans will never accept having a repository forced upon them under such circumstances, and indeed we are astounded that the Congress could even seriously consider such an unprincipled and irresponsible approach...We will fight this unjustifiable Senate Energy Committee legislation with all of our resources, and I will assure those who are supporting that approach that it ultimately will not work and, moreover, ultimately it will be far more costly and time consuming than ever imagined by those proponents of the legislation."⁴²

S.1668, the Nuclear Waste Policy Act Amendments Act of 1987, contained most of the provisions that were ultimately included in the legislation passed on December 21, 1987. However, in the negotiations leading to the budget reconciliation conference report that included the bill, the language was revised to focus solely on Yucca Mountain.

The original NWPAA had required the final three candidates for the first repository to be characterized⁴³ before the president made a recommendation to Congress; however, the three sites had not been characterized at the end of 1987, and the president never recommended a site before Congress selected Yucca Mountain. A contributing factor to Congress's actions



was that the costs of characterization—as required by the NWPAs—had grown to more than \$1 billion for each site.⁴⁴ In 1981, DOE had estimated costs for site characterization from \$60 million to \$80 million, but these estimates grew much larger in subsequent estimates in 1984 and 1987.⁴⁵

The legislation that passed in 1987 shattered whatever remained of the original NWPAs compromise. The western states felt betrayed by the eastern states—where most of the nuclear power plants resided—and the vote served to harden resolve to oppose the repository project in Nevada, where the law came to be known as the “Screw Nevada” bill.⁴⁶

After the 1987 amendments to the NWPAs, Congressman Mo Udall (D-AZ), one of the principal authors of the original NWPAs, stated on the floor of the US House of Representatives:

We created a principled process for finding the safest, most sensible places to bury these dangerous wastes. We were confident that while no State wanted a nuclear waste repository, the States ultimately chosen would accept the outcome because the selection process would have been fair and technically credible.

Today, just 5 years later, this great program is in ruins. To help a few office seekers in the last election, the administration killed the eastern repository program, shattering the delicate regional balance at the heart of the 1982 act. Since then the Western States have felt they are being treated unfairly, and they no longer trust the technical integrity of the Department of Energy’s siting decisions.⁴⁷

This is not to say that Congress thought that Yucca Mountain was a bad site in 1987. Years later, Senator Bennett Johnston (D-LA) recalled the increasing costs of site characterization and his effort to call on the Department of Energy to pick one of the three sites and characterize it to “save \$2.4 billion.” Senator Johnston asserted that in the conference committee, the House wanted to go ahead and name Yucca Mountain—that is to “do it politically, not scientifically”—though he also recalled that the indication he had at the time was that Yucca Mountain might have been picked for scientific reasons anyway.⁴⁸ The site was ranked at or near the top of five “well-qualified” sites for several performance metrics, according to a 1986 assessment by DOE.⁴⁹

The law required the NRC to determine whether the site at Yucca Mountain was safe or not, but there was no backup provision in the event that Yucca Mountain was not viable. The absence of a backup plan contributed to a perception by the state of Nevada and other observers that the review process would never be fair given the importance of making the Yucca Mountain repository site work for the US nuclear industry and defense activities and the strong desire of other states not to host the repository.

For example, as directed by Congress in 1992, the US Environmental Protection Agency (EPA) and NRC promulgated regulations specific to Yucca Mountain regarding public health and environmental standards and how to implement those standards (40 CFR Part 197 and 10 CFR Part 63, respectively). These regulations differed substantively from the analogous generic regulations for geologic repositories (40 CFR Part 191 and 10 CFR Part 60) that had first been published before Yucca Mountain was selected. Within Nevada, there arose a perception that



the federal government would simply alter design criteria or regulatory standards for Yucca Mountain if problems arose in meeting the existing ones, as the federal government could not afford to have Yucca Mountain fail.⁵⁰

C. The Current Predicament

Many other developments have taken place since the 1987 amendments to the NWPA:

- 1998: the federal government failed to take title to SNF by January 31, as required by the NWPA, and subsequently utilities began to successfully sue the federal government for the costs of managing SNF at reactor sites.⁵¹
- 2002: the Yucca Mountain site was formally recommended to Congress by President George W. Bush. In response, the governor of Nevada submitted a notice of disapproval to Congress, as outlined in the NWPA, and Congress was then required to vote on a resolution to override Nevada's objection for the project to proceed.⁵²
- 2004: a federal court ruled that the EPA radiation standards promulgated for Yucca Mountain were not consistent with the recommendations in a 1995 National Academy of Sciences report, which had been a requirement in federal law.⁵³
- 2008: DOE submitted to the NRC the world's first application for a license to construct a geological repository to dispose of SNF and HLW, and EPA revised its radiation standards.⁵⁴
- 2010: the Obama administration announced that it was seeking to withdraw the license application for Yucca Mountain and forming a Blue Ribbon Commission (BRC)⁵⁵ to recommend alternatives. The administration did not request money for the project in its subsequent annual budget requests to Congress and dissolved the Office of Civilian Radioactive Waste Management. Several states (including South Carolina and Washington) and parties sued DOE and NRC, contending that DOE had no authority to terminate the Yucca Mountain project.⁵⁶
- 2013: a federal court ruled that the utilities need not pay the NWF fees on account of the federal government's continuing failure on nuclear waste management,⁵⁷ and DOE stopped collecting the fee in May of 2014.
- 2013: a federal court ruled that NRC must still evaluate the license application that had been submitted for Yucca Mountain with the money that had been previously appropriated to the NRC for these purposes.⁵⁸
- 2015: the NRC finished a safety evaluation report of DOE's Yucca Mountain application. The NRC staff found that DOE met applicable regulatory requirements, except for requirements regarding ownership of land and water rights.⁵⁹
- 2015: President Obama made a determination that a separate repository for defense waste was required, as section 8 of the NWPA required before proceeding with planning to dispose of defense waste at a non-Yucca Mountain site.⁶⁰



- 2017: DOE issued a draft consent-based siting process in January for both consolidated interim storage and disposal facilities to manage defense and commercial waste.⁶¹

In 2020, there is still no repository that can dispose of HLW or SNF in the United States. Since 2010, Congress has not appropriated a single dollar for the Yucca Mountain project due to opposition from the Nevada congressional delegation. A life cycle assessment in 2008 for the Yucca Mountain repository estimated that remaining costs included \$54.8 billion in construction, operation, and decommissioning costs out to 2133, an additional \$19.5 billion for transportation activities, and \$8.4 billion for other activities.⁶² The Trump administration requested funding for the Yucca Mountain project in its budget requests for FY2018, FY2019, and FY2020, but requested no money for the project in its FY2021 request.

Thus, since 1987, there have been two constants in US nuclear waste policy: commercial SNF can only be disposed of at Yucca Mountain, and the state of Nevada steadfastly opposes the project. Problems from this stalemate have continued to mount. SNF from US aircraft carriers and submarines is discharged annually as the vessels come to shore for refueling or decommissioning. The US government has an agreement in place with the state of Idaho to store it at Idaho National Laboratory, but that agreement includes a clause that if no naval SNF is removed from Idaho by 2035, the federal government will begin to pay a fine,⁶³ and Idaho has the option to stop further shipments into the state.

The US nuclear weapons complex is no longer operating reactors to produce additional plutonium, and as a result that particular source of defense waste is not increasing. However, there are still thousands of metric tons of HLW from the US nuclear weapons program that sit largely in three states—Idaho, South Carolina, and Washington. Even after all of that waste has been processed at the sites and is ready for final disposal, the federal government will not be able to honor its obligations to those states and local communities without a geologic repository.

Finally, in the realm of nuclear waste from utilities, the US government finds itself in an exceptionally challenging place. Reactor licensees are no longer paying the NWF fee and some of their costs for on-site storage of SNF are reimbursed by the federal government through the US Judgment Fund.⁶⁴ Following the federal government's failure to take title to commercial nuclear waste by January 31, 1998, licensees began suing DOE to recover the costs incurred from storing SNF at their reactor sites. Through FY2017, the US government has paid \$6.9 billion out of the Judgment Fund for this failure, and DOE has estimated that potential liabilities for repository delays could total as much as \$34.1 billion.⁶⁵ These legal costs are not paid by DOE, however, which is legally responsible for taking the SNF, and thus DOE's budget is not impacted by this failure.

There is also no safety crisis pushing elected officials to move with alacrity—commercial SNF is being stored safely and securely in pools and dry casks at reactor sites. However, when reactors shut down and are decommissioned, the SNF has nowhere to go (e.g., sites in California, Colorado, Connecticut, Massachusetts, Maine, Michigan, and Oregon⁶⁶). The federal government, through lawsuits and the Judgment Fund, is paying for the storage of SNF at these sites and others (e.g., the security costs associated with guarding the SNF), but the



local communities are still prevented from reclaiming all of their land for other purposes.

Thus, the current impasse in US nuclear waste management may potentially impact the US Navy's operations, hamper the ability of the US government to meet its commitments to clean up Cold War nuclear weapons sites, add billions of dollars in costs to US taxpayers, and constrain the potential for nuclear energy to address climate change. These observations alone argue for congressional attention. However, since the US nuclear waste program's direction was last set in the 1980s, there have also been some positive developments in nuclear waste management (in the United States and in other countries) that should be factored into rethinking the US approach, as discussed in the next chapter.



III. THE SCIENTIFIC CONSENSUS ON DEEP GEOLOGIC DISPOSAL

The spent fuel produced by reactors includes isotopes that are radioactive (i.e., “radionuclides”), and the radiation given off by these isotopes is harmful to human health if placed in close proximity to people without proper shielding. Some of these radionuclides are gaseous or water soluble, or they strongly bond to nonnuclear materials and thus can be mobile if they are released from their waste packages. The ultimate concern is human exposure to radiation due to inhaled gaseous and aerosol radionuclides, external radiation exposure due to proximity to contaminated land, or the ingestion of food or water containing radionuclides.

However, for many decades the scientific consensus has been that SNF can be safely disposed of in a manner that protects human health. This chapter briefly reviews the science behind the disposal of SNF in repositories mined out of underground geologic formations and describes the WIPP facility in New Mexico, which is currently disposing of defense-generated TRU waste in an underground salt formation. The chapter reviews three of the foreign geologic repository programs that have been making progress toward disposal, and their consent-based approach to siting using an organization whose sole mission is nuclear waste management. Finally, the chapter discusses some strategic advantages if the United States were to pursue disposal of defense-generated SNF and HLW ahead of commercial SNF disposal.

A. Safely Isolating Nuclear Waste from the Biosphere

The National Academy of Sciences’ National Research Council first endorsed the concept of geologic disposal for HLW in 1957 and in particular found that disposal of such wastes could be done safely and at many different locations in the United States.⁶⁷ Geologic disposal has remained the consensus approach in the scientific community.⁶⁸ Some underground geologic formations have remained stable for millions to hundreds of millions of years—much longer than the half-lives of some of the most long-lived radionuclides in SNF, such as iodine-129, which has a half-life of 15.7 million years. A mined repository in such geologic formations could potentially provide an appropriate place for the disposal of SNF and HLW, subject to additional analysis of other natural and engineered features (e.g., a specified waste inventory, projected water flow through the site, and waste package construction.)

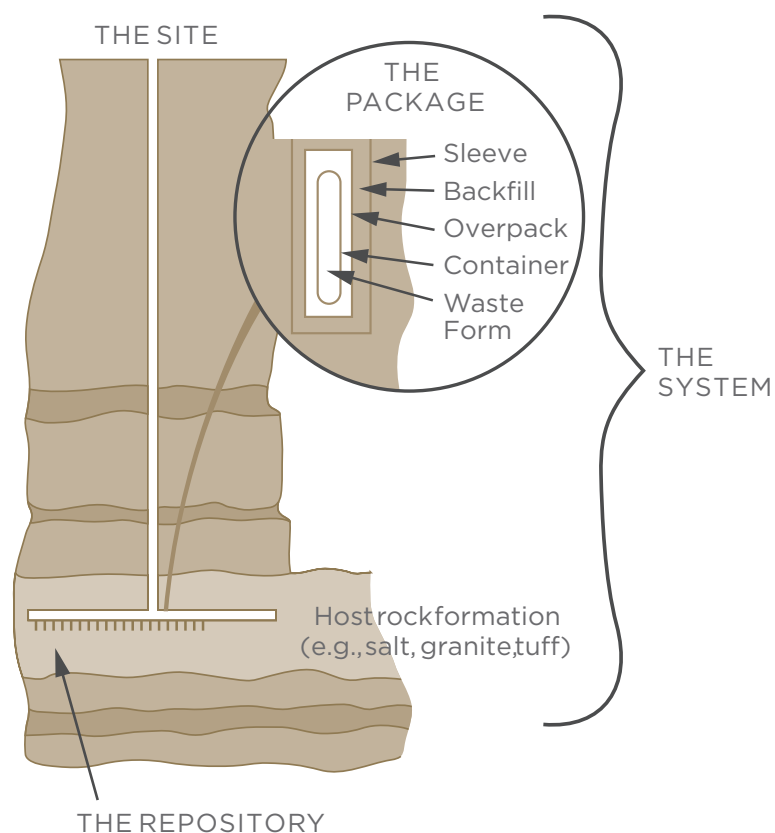
The plan for HLW and SNF disposal studied by the United States and other countries employs a “defense-in-depth” approach for isolating nuclear waste from the biosphere. This strategy utilizes a combination of engineered barriers and natural barriers to limit radionuclide movement from the repository (figure 1), including⁶⁹

- the waste form (e.g., light water reactor uranium dioxide pellets, which have been partially converted during reactor operation to other heavy elements and fission products; for light water reactor SNF, there is also the metal cladding around the pellets, which is usually a zirconium-alloy metal);⁷⁰



- engineered barriers surrounding the waste form (e.g., metal containers or packages for the SNF/HLW);
- any encompassing buffer (e.g., bentonite clay around the packages) and backfill (e.g., filling the mined tunnels with material before closure); and
- the host rock of the repository site.

Figure 1: Illustration of a potential mined geologic repository with chambers for waste package emplacement



Source: BRC 2012, https://www.energy.gov/sites/prod/files/2013/04/f0/brc_finalreport_jan2012.pdf

The objective of the barriers is to lengthen the travel times of SNF/HLW radionuclides from the repository to the biosphere.⁷¹ The engineered barriers will eventually degrade, at which point the natural barriers will slow radionuclide migration and limit off-site exposures of nearby populations.

Water transport is the principal manner by which radionuclides leave a given repository site and migrate to bodies of water that could be used for drinking or growing food and in that



way impact human health. As radionuclides are transported by water from their emplacement locations after package degradation, depending on the specific geology involved, they may also experience reactions (e.g., adsorption reactions with mineral surfaces) along the way, thereby slowing their migration. Modeling of these effects is dependent on the characteristics of particular sites and part of providing evidence that an individual repository will meet regulatory standards for radiation protection.

The relevant standards to protect human health from radionuclide migration from geologic repositories are generally based on limiting radiation dose from the ingestion or inhalation of radioactive materials. The time period for regulating potential off-site dose is long—from 10,000 to as long as 1 million years. People receive doses of radiation from natural backgrounds and man-made sources (e.g., medical procedures) each year (on average 620 millirem),⁷² but additional radiation exposure from breathing in dust, drinking water, and eating food contaminated with radioactive materials can lead to an increased chance of cancer in later life. Typically, however, radiation regulatory limits are many times below where health effects can be measured and well below the average yearly radiation dose from natural sources or man-made sources.

By law, the EPA is charged with setting the radiation standards that apply to geologic repositories for SNF and HLW disposal, which it does in 40 CFR Part 191. That standard currently applies to the WIPP site in New Mexico (with additional criteria in Part 194). However, in the Energy Policy Act of 1992, Congress directed EPA to produce regulations specific to Yucca Mountain, which it did in 40 CFR Part 197. Those standards limit the “reasonably maximally exposed individual” to 15 millirem/year for the first 10,000 years following disposal and 100 millirem/year after that. This individual is assumed to drink two liters of water per day from ground water in the “accessible environment above the highest concentration of radionuclides in the plume of contamination.”

The heat generated by SNF or HLW at the time of emplacement is another important detail that affects repository design. If the heat generated by nuclear waste in a geologic repository raises the temperature of the nearby host rock significantly, it has the potential to result in adverse impacts to repository performance, including accelerated corrosion and degradation of the waste packages and the SNF/HLW itself, as well as impacts on local geochemistry and groundwater flow. To limit localized temperatures, repositories may reduce the number of waste packages or SNF assemblies in one location and put additional space between the locations of waste packages. In that way, heat considerations can affect the total volume of a repository (e.g., the number and length of tunnels that are mined) for a given amount of SNF and HLW or limit the amount of SNF and HLW that can be disposed if the available repository volume is constrained. As heat considerations can affect the number of waste packages that can be disposed and the volume of tunnels required, they ultimately have cost implications.

The exact isotopic composition of SNF when it is removed from a reactor and the time between when it was removed from reactor operation to when it is emplaced underground determines its rate of heat generation at disposal, as well as the total amount of heat it will ultimately transmit to its environment over the subsequent millennia. Since SNF cools exponentially, longer interim storage of SNF means it will be generating less heat (and



radiation) when it is finally transported to and placed in a repository.⁷³ There are, therefore, some waste management benefits to interim storage of SNF (either at reactor sites or in consolidated interim storage facilities) for a number of decades before final disposal.

B. An Operating Geologic Repository in the United States: The Waste Isolation Pilot Plant

The United States operates the only geologic repository in the world for long-lived radioactive waste disposal. Located in New Mexico, the Waste Isolation Pilot Plant began disposal operations over 20 years ago. WIPP offers a possible model for how a future repository program for SNF and HLW could function.

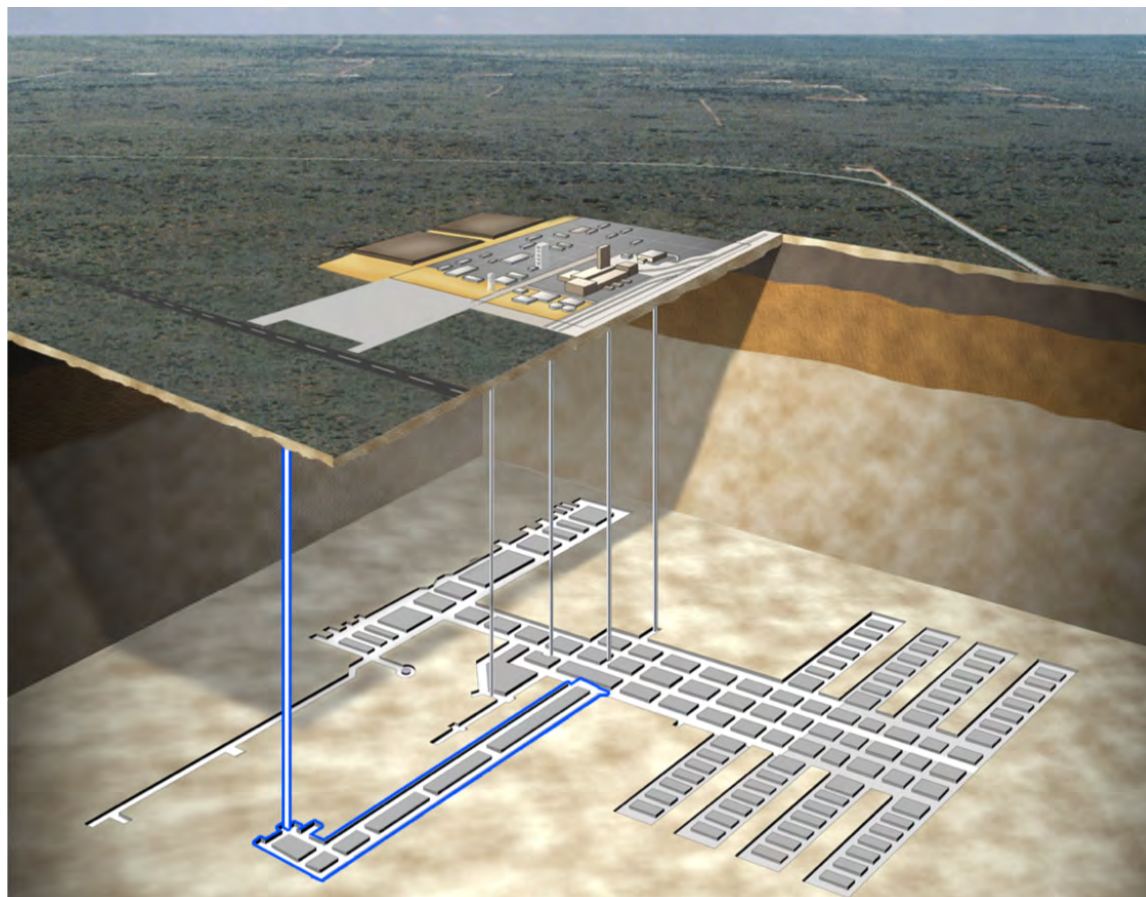
The origins of defense HLW from the US nuclear weapons program began in the 1940s and included a separate and generally less radioactive nuclear waste stream. As part of the operation of nuclear weapons facilities, a large variety of materials (e.g., protective clothing, laboratory equipment, and waste sludges) became contaminated with heavy radioactive elements such as plutonium and americium. These contaminated materials, on account of the long half-lives of some of the elements involved, needed to be disposed of in a geologic repository.

WIPP is about 25 miles east of Carlsbad and has been accepting TRU nuclear waste generated by US defense programs since 1999. The site itself is a network of rooms excavated into a large salt deposit 2,150 feet underground. (See figure 2 for an illustration of WIPP.)

The salt deposit that WIPP is mined into is 250 million years old, and the primary formation containing the WIPP repository is about 2,000 feet thick, beginning 850 feet below the surface.⁷⁴ The site presents several appealing features from the perspective of nuclear waste disposal:

- The salt is relatively easy to mine.
- Any fractures are self-healing, on account of salt's plastic quality, which seals off radioactive waste from the environment.
- The existence of the salt deposit indicates a lack of flowing groundwater, which would otherwise have dissolved the formation.
- The large size of the formation would imply “hundreds of thousands to millions of years to dissolve sufficient salt to threaten such a repository.”⁷⁵
- The lack of potable groundwater at the site.



Figure 2: WIPP geologic repository illustration

Source: DOE, <https://www.lanl.gov/orgs/nmt/nmtdo/AQarchive/02spring/WIPP.html>

The facility has two primary regulators: the EPA and the New Mexico Environment Department. Under the Resource Conservation and Recovery Act (RCRA),⁷⁶ the EPA authorizes states to implement hazardous waste regulatory programs. The New Mexico Environment Department regulates WIPP through a Hazardous Waste Facility Permit that describes how the repository manages, stores, and disposes of materials that are present in the mixed waste (i.e., containing both radioactive and hazardous waste components).

In the 1970s the federal government began investigations of the salt formations in the area where WIPP is now located for the potential disposal of radioactive waste. Which types of nuclear waste were to be disposed at this potential repository were unclear during the early investigations, and DOE's occasional attempts to potentially include commercial SNF created mistrust and tension with the state.⁷⁷ New Mexico got DOE to sign an MOU regarding the site in 1978, creating the Environmental Evaluation Group (EEG), which was an independent



scientific body chartered to review technical matters related to WIPP. The EEG would play a valuable role in the ensuing years as a respected independent authority. In one case, as new technical information about the nearby geology emerged, the EEG recommended changes to the repository design and DOE changed its approach.⁷⁸

In December of 1979, Congress passed the WIPP Authorization Act (Public Law 96-164), which limited WIPP's mission to defense waste—ruling out commercial SNF. The WIPP Authorization Act also required that the secretary of energy “consult and cooperate with the appropriate officials of the State of New Mexico, with respect to the public health and safety concerns of such State in regard to such project.” There was even a directive that the secretary should seek a written agreement with the appropriate officials of the State of New Mexico by September 30, 1980, laying out the procedures for consultation and cooperation (C&C). DOE and New Mexico entered into negotiations over this agreement, but on September 28, Jeff Bingaman, then the attorney general for New Mexico (later a US senator), said New Mexico would not sign an agreement unless DOE stipulated that it would be legally binding and its implementation subject to judicial review.⁷⁹

A standoff ultimately led Bingaman to sue the federal government (DOE and the US Department of Interior) on May 14, 1981. Eleven days later, the state sought a preliminary injunction to halt construction, but by the following month, DOE and New Mexico had reached a settlement. The stipulated agreement, executed among the State of New Mexico, DOE, and the US Department of the Interior, was filed with the US District Court of the District of New Mexico on July 1, 1981.⁸⁰ Among other provisions, the stipulated agreement requires DOE to make a “good faith effort” to work with the State of New Mexico in resolving matters that involve state concerns regarding the WIPP project.

A C&C agreement, signed by New Mexico governor Bruce King and Secretary of Energy James Edwards on July 1, 1981, was included as an appendix to the stipulated agreement. It provided for the timely and open exchange of information about WIPP as well as a mechanism for conflict resolution on matters of public health, safety, and welfare by which the state could challenge DOE in court if it did not address state concerns. The C&C agreement also required the federal government to give advance notice of key events and milestones to the state and prohibited the disposal of defense HLW at WIPP.

A “working agreement” was attached as an appendix to the C&C agreement to serve as a dynamic document setting forth the working details of the C&C process. Included in the working agreement is a listing of key events and milestones relating to development of the WIPP project. The working agreement also provides a detailed description of the information to be included in the “safety analysis report” for WIPP.

These documents were supplemented, revised, modified, and amended over the subsequent decade as part of negotiations between the state and the federal government. They have given the state a significant voice on WIPP's development and have required DOE to respect state views and concerns about the WIPP project.

For example, in 1982, the state and the federal government reached agreement on a supplemental stipulated agreement. The agreement addressed New Mexico's off-site concerns



in several areas: (1) state liability, (2) emergency response preparedness, (3) independent transportation / environmental monitoring of the WIPP project activities, and (4) repairing state highways (including assistance to New Mexico in obtaining federal funds to upgrade state highways used for transportation of waste to WIPP).

In the years that followed, DOE failed to adhere to the agreements. To take one instance, DOE did not provide advance notification to New Mexico about the construction of underground structures at WIPP (a “key event”), and in 1983 this led to state threats to invoke the C&C agreement conflict resolution measures. The backlash led to the first modification of the C&C agreement, which was signed in 1984 and included several modifications, such as

- new limitations on the characteristics of the nuclear waste that could be brought to WIPP;
- an agreement that the amount of defense HLW used on an experimental basis at the site would not exceed a specific level of radioactivity per waste canister or a total amount of radioactivity;
- requirements that DOE disclose specified technical characteristics of defense high-level waste canisters;
- a statement that WIPP “is not designed for the permanent disposal of high-level waste, nor has the WIPP site itself been characterized for such permanent disposal”; and
- decontamination and decommissioning responsibilities (assigned to the federal government) along with postclosure institutional controls at the site.

In 1992, Congress passed the Waste Isolation Pilot Plant Land Withdrawal Act of 1992 that limited the mission of WIPP to defense-generated TRU waste and withdrew the land associated with the repository from public use. It required EPA to certify that WIPP was in compliance with the generic repository standards in 40 CFR Part 191 before commencing operations. Furthermore, it gave New Mexico the authority to regulate mixed waste operations at WIPP under RCRA and gave the National Academy of Sciences a formal role in reviewing WIPP-related technical matters. The legislation also authorized economic assistance to the state and put requirements on the WIPP transportation program, including NRC certification of transportation packages and construction of a bypass around Santa Fe.

Under EPA regulations, WIPP must be shown to safely limit the release of radionuclides for 10,000 years. In 1998, EPA certified that WIPP was in compliance with the relevant repository radiation standards, and in 1999 WIPP began receiving TRU waste shipments.

The state granted WIPP a final RCRA facility permit in October 1999, making the facility subject to RCRA operating standards. New Mexico could then take enforcement actions for permit violations at WIPP, should they occur, giving the state leverage in decision-making regarding the repository.

The development of WIPP did not take place along a straight line, nor was it without twists or individual decisions that imperiled its future at times. It does, however, present an alternative



development path to the one pursued with Yucca Mountain. The WIPP approach utilized written agreements and involved a vigorous back-and-forth between the federal and state governments that ultimately produced the world's first licensed and operating deep geologic repository for long-lived nuclear waste. The relationship built between the federal government and New Mexico was in fact durable enough that when two accidents at the WIPP site occurred in 2014,⁸¹ the two entities were able to work through them and WIPP returned to operations in 2017.

As discussed in chapter 4, the United States has safely and successfully made over 12,000 shipments of TRU waste from a dozen locations to WIPP for disposal. While TRU waste is generally less radioactive than SNF and HLW, the project as a whole can still be viewed as a model for how a future geologic repository program for commercial SNF could be structured.

C. Progress Made by the Finnish, Swedish, and Canadian Nuclear Waste Programs

As the United States' HLW and SNF disposal program has ceased to make progress, other countries have taken the lead in repository development. Every country with a nuclear power program must manage the SNF once it is removed from reactors, and several have made substantial progress toward a disposal facility.⁸² To provide concrete illustrations, three countries' programs are described below: Finland, Sweden, and Canada. Finland can be looked at as the world leader in geologic repository efforts as it is already in the process of constructing a facility, with SNF disposal operations expected to begin in 2023. Sweden is in the process of licensing a repository, while Canada is progressing toward a site selection in 2023. All three countries have pursued an approach that is premised on the concept of obtaining consent from communities that would host the repositories. In the United States, the compromise approach envisioned in the original NWSA of 1982 was that the federal government would select a site, and while a state could submit a notice of disapproval in response to the selection, Congress could then vote on a resolution to override that notice of disapproval, which is exactly what happened in the case of Yucca Mountain.

This section is not to suggest that each of these countries' programs have already succeeded—Canada has not yet selected a site, and Finland and Sweden still have additional licensing actions ahead before any SNF can be disposed of, assuming no technical issues prove to be a barrier.⁸³ The point is that each country has been making progress toward a geologic repository using a single purpose organization that has access to the funds it needs and that each respective entity has employed a staged approach involving both technical evaluations and a back-and-forth with the local communities that would be potentially hosting a repository (including the option for those communities to withdraw from consideration).

Finland has four operating nuclear reactors that supply about 30% of its electricity.⁸⁴ A fifth reactor is under construction, and a sixth is planned as part of the Finnish government's effort to phase out coal generation.

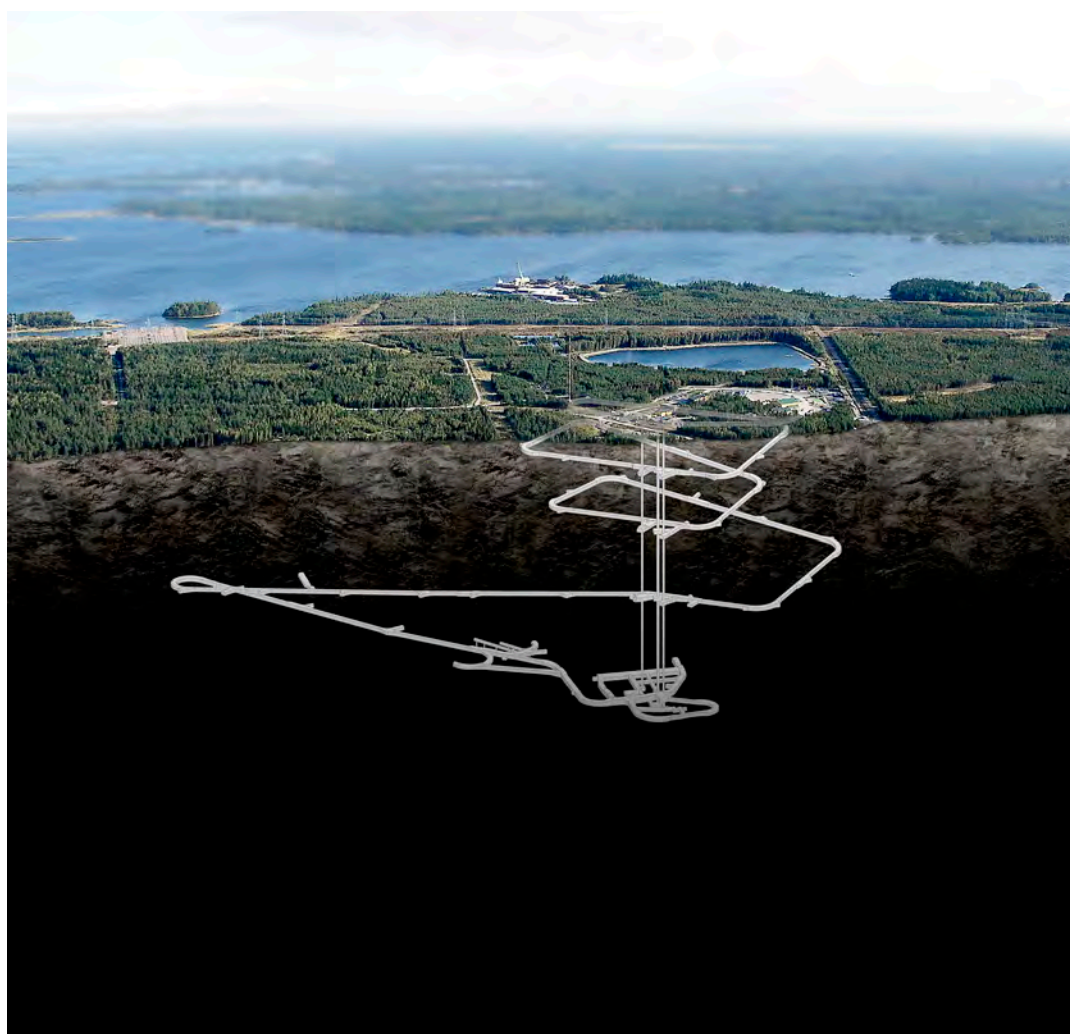
The Finnish program to develop a geologic repository began in 1983, and the siting process proceeded in three steps. The first step entailed a countrywide screening of sites, following by a second phase of preliminary investigations. The third phase lasted from 1993 to 2000



and focused on more detailed investigations and environmental impact assessments for four potential sites.

While all four sites were assessed to be technically viable, the local support for SNF disposal in a geologic repository was strongest in two communities. Given that factor and other considerations (e.g., proximity to existing nuclear reactors), the private company responsible for managing SNF (as opposed to the government-led approach in the United States), Posiva Oy, applied to move forward with a repository in one community, Eurajoki. The municipal council there voted in favor (20 to 7) of the repository, and in 2001 Finland's Parliament voted 159 to 3 to proceed. (An illustration of the proposed facility is shown in figure 3.)

Figure 3: Proposed Finnish repository at Onkalo

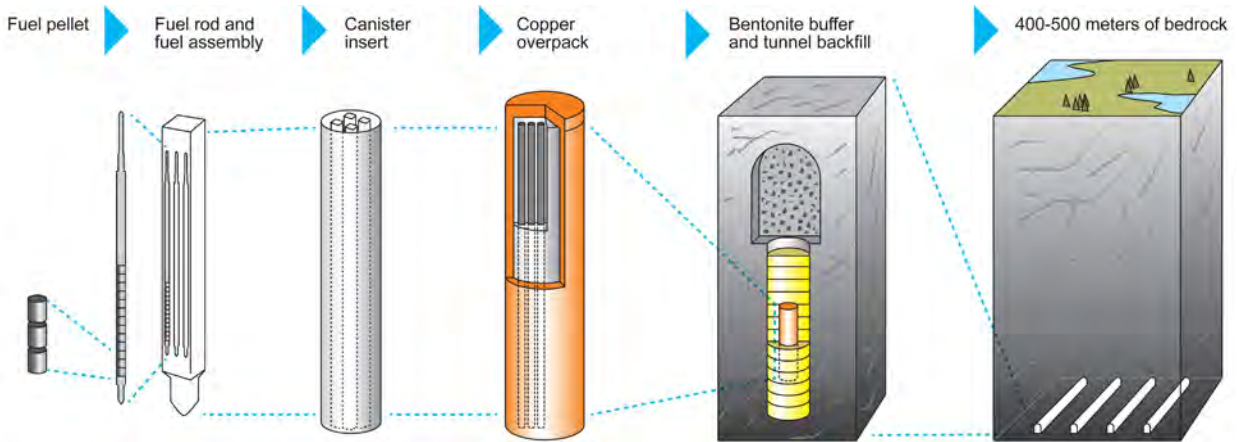


Source: Posiva Oy, http://www.posiva.fi/en/media/image_gallery?gfid_2061=92#gallery_2061



Posiva submitted its construction license application to the Ministry of Employment and the Economy in 2013, and the government granted a construction license for the project in 2015. Construction work began on the repository the following year. Posiva is still required to obtain a separate operating license for the facility, with operation expected to begin in 2023.⁸⁵

Figure 4: Barriers to the release of radionuclides from the Finnish repository



Source: Posiva Oy, http://www.posiva.fi/en/media/image_gallery?qfid_2061=92#gallery_2061

The Finnish approach is based on the Swedish KBS-3 concept for nuclear waste disposal, though Finland is actually closer to the start of operations than Sweden.⁸⁶ According to the KBS-3 concept, the light water reactor SNF assemblies are loaded into corrosion-resistant canisters made of a cast-iron insert with a copper overpack, which are surrounded by bentonite clay to slow the movement of water and retard the migration of radionuclides. The final barrier is the bedrock surrounding the canisters and bentonite. All of these barriers are shown in figure 4.

Sweden has been generating electricity from nuclear power plants since 1964. Eight nuclear reactors provide about 40% of its electricity.⁸⁷

In 1992, the private company (again, in contrast to the US-government-led approach) in charge of managing SNF, SKB, began a siting process. After inviting interest from municipalities, SKB conducted work with the two local governments that agreed to be considered. However, in both cases, subsequent public referendums rejected the projects.

SKB then studied five potential sites and approached three of the associated communities where nuclear facilities already existed. Two municipal councils consented to more detailed assessments, while the third declined. In 2009, a site was chosen in Forsmark, a village that has an operating nuclear power plant, a disposal facility for shorter-lived nuclear waste, and was judged to have better geologic features. Of potential interest to the US program, the municipality that was not chosen was still rewarded with economic benefits for its participation.



In 2014, SKB submitted a license application to the Swedish government to build a spent fuel repository at Forsmark.⁸⁸ In January 2018, the Swedish national Land and Environmental Court deferred a decision on the repository pending SKB's submittal of additional information,⁸⁹ and a final government decision on construction is still pending. SKB hopes the facility will be ready to receive deliveries in the 2030s.

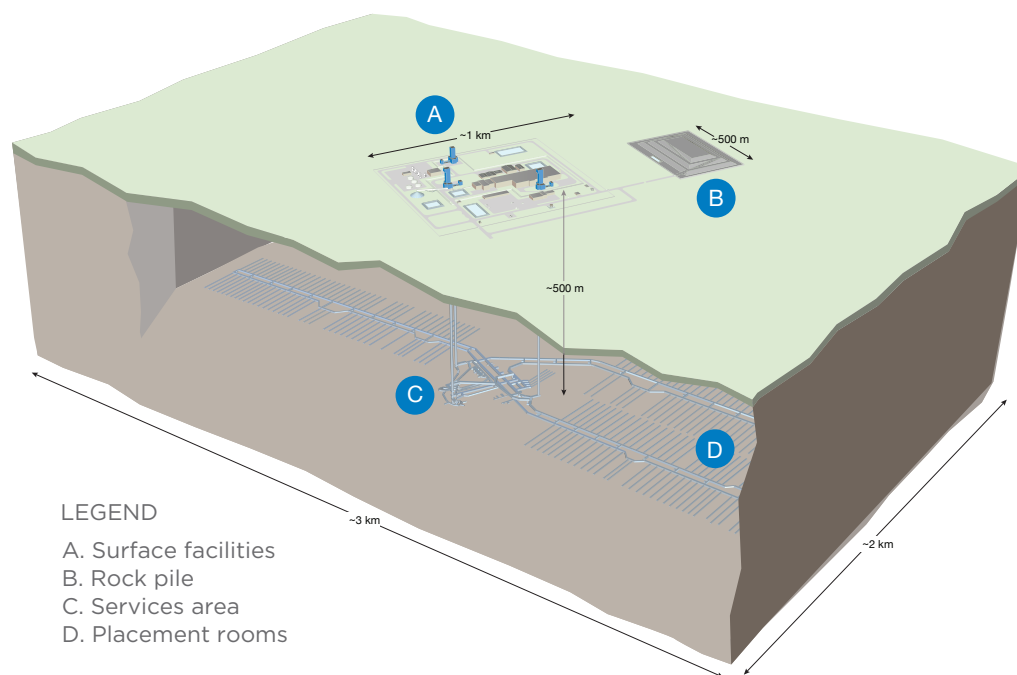
Canada operates 19 nuclear reactors, which provide about 15% of its electricity supply.⁹⁰ The Nuclear Waste Management Organization (NWMO) is a not-for-profit, private entity established in 2002 by Canada's nuclear electricity producers as required by Canada's Nuclear Fuel Waste Act. The NWMO's founding members are Ontario Power Generation, New Brunswick Power Corporation, and Hydro-Quebec, and all of these organizations—along with Atomic Energy of Canada Limited—are mandated to fund its operations. The NWMO is charged with developing and implementing a national solution for used fuel.⁹¹

One relevant and substantial difference between the United States and both Sweden and Finland is that these two countries do not have the equivalent of the US state-level government, which has been a source of opposition to proposed SNF disposal and storage projects even when the local government is supportive. Canada is somewhat more similar to the US situation, as it has provincial-level governments that are in between federal and local governments. A mitigating simplification in Canada's nuclear waste management program, however, is that the large majority of Canadian nuclear power plants are in the province of Ontario, which is also where the repository sites under consideration are located.

Like the United States' program today, Canada's nuclear waste program had to be restructured many years ago. A commission study from the 1990s concluded that the previous Canadian effort did not enjoy public confidence, which contributed to its failure. As a result, the Canadian national government passed legislation that established the NWMO. By virtue of when it was created, the NWMO was able to benefit from the Finnish and Swedish experiences, and it put extensive focus on understanding and incorporating the views of Canadian citizens.

After the NWMO initiated a voluntary siting process in 2010, 22 communities expressed interest in potentially hosting a repository. This number was ultimately narrowed down through multistage technical and socioeconomic and cultural assessments. At the end of 2019, the NWMO announced that it had narrowed down the sites under consideration from five to two. While they had opportunities to do so, neither of these two communities decided to remove themselves from consideration as the site selection process moved forward. NWMO plans to select one site to focus on in 2023. An illustration of what the Canadian repository could look like is shown in figure 5.



Figure 5: The Canadian repository concept

Source: NWMO, "Triennial Report 2017 to 2019," March 2020, 2020 Nuclear Waste Management Organization, <https://www.nwmo.ca/~media/Site/Reports/2020/03/06/19/17/NWMO-Implementation-Plan-202024.ashx?la=en>

D. Advantages to Pursuing Disposal of US Defense HLW and SNF First

Unlike Finland, Sweden, and Canada, the United States must also dispose of a nuclear waste stream from defense-related activities that is distinct from commercial SNF generation. As discussed earlier in this report, the production of nuclear weapons and the operation of the navy's aircraft carriers and submarines have produced SNF and HLW. This section suggests that pursuing disposal of defense waste before commercial SNF presents some advantages as part of a comprehensive US nuclear waste strategy.

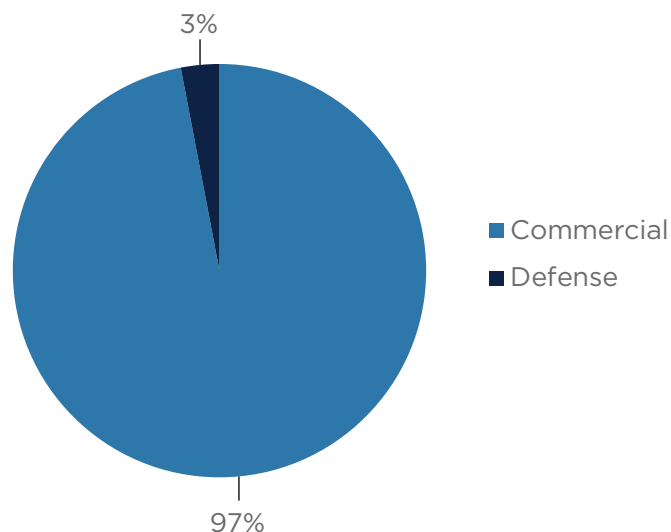
The TRU waste being disposed of at the WIPP site was generated by the US nuclear weapons program. The construction of nuclear weapons during the Cold War was in the context of the threat of Soviet aggression, and a hypothesis that has been suggested is that US citizens (e.g., in New Mexico) recognized that they themselves benefited from these national security missions that produced the associated TRU waste and also that they were helping to serve a national security mission by disposing of it.⁹² This could be contrasted with commercial waste disposal, where a state is being asked to accept the risk associated with disposing of the waste without having enjoyed the benefits associated with its generation (e.g., jobs at a power plant outside its borders). That might be especially true if the waste is from a nuclear power plant on the other side of the country, as it is harder to see how the potential repository host



state would have benefited from the economic development, power supply, or reduced air pollution that came with the waste (climate benefits aside).⁹³

If that hypothesis is correct, then pursuing disposal of defense SNF and HLW first might have an added advantage of potentially greater public acceptance.

Figure 6: Approximate percentages of radioactivity in US SNF and HLW

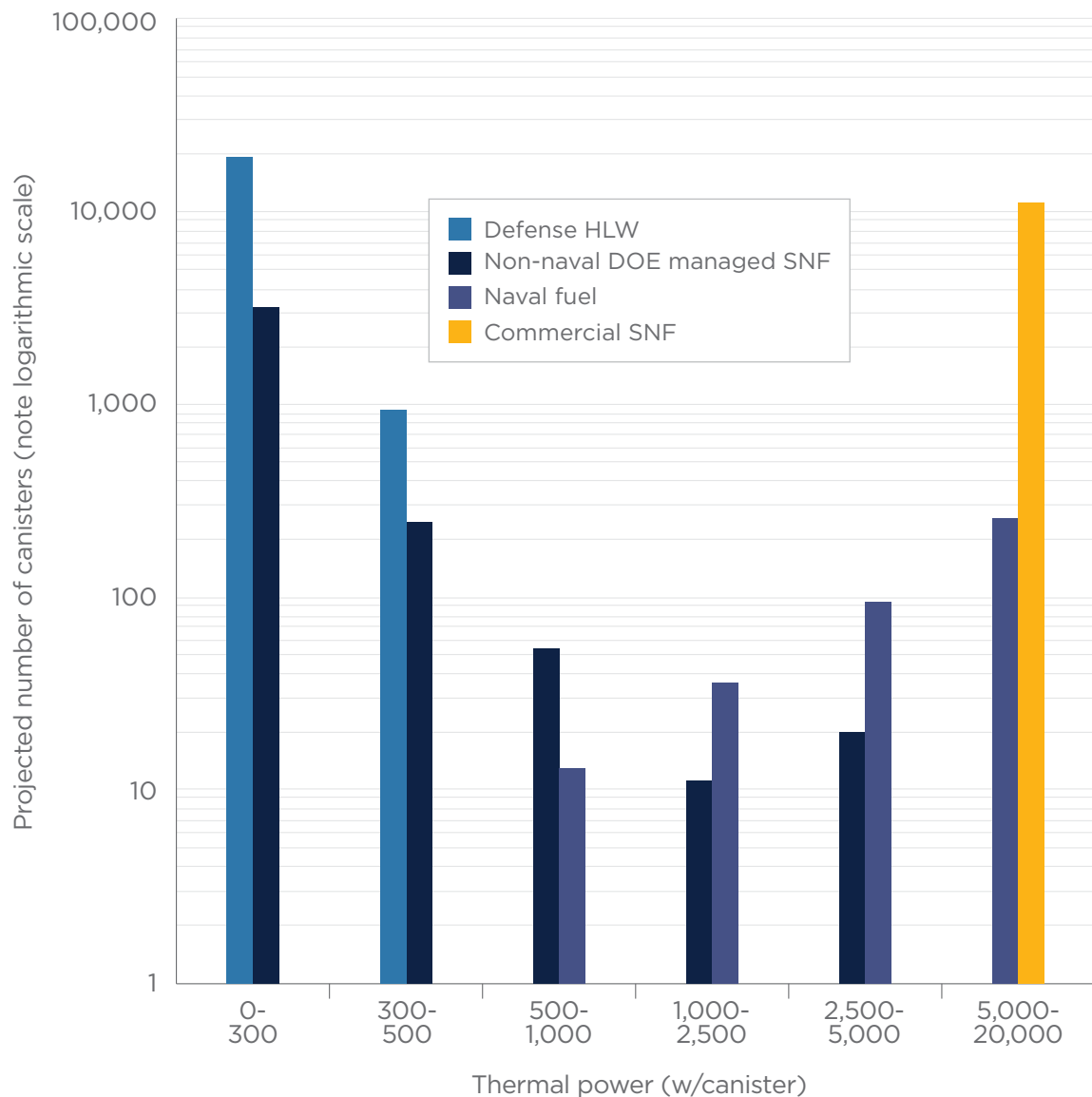


Source: Figure 2 of the US Nuclear Waste Technical Review Board report, "Evaluation of Technical Issues Associated with the Development of a Separate Repository for U.S. Department of Energy-Managed High-Level Radioactive Waste and Spent Nuclear Fuel," June 2015

In addition, the technical characteristics of defense waste make it a good candidate for demonstrating the safe transportation and disposal of SNF and HLW. To begin with, as figure 6 shows, there is a much smaller amount of radioactivity in the defense waste inventory as compared to the commercial waste inventory. Also, as figure 7 illustrates, overall, defense waste canisters are cooler than commercial ones. Finally, the plutonium and enriched uranium have already been removed from the defense program's HLW, so the potential value in being able to retrieve that inventory in the future for reuse is low.⁹⁴ This last point could help to enable new approaches to defense HLW such as deep borehole disposal.⁹⁵

Smaller quantities of waste and waste that is less radioactive are two characteristics that by themselves generally tend to reduce transportation risks and make it easier to meet the associated public health protection regulations for disposal in a geologic repository.⁹⁶ Cooler waste, for example, would change the heat considerations for a repository design and might enable closer spacing of the waste packages, and thus a smaller repository volume, which could mean less tunneling and associated cost. It could also potentially simplify aspects of repository design and operations, including greater flexibility in the use of backfill (where the tunnels are filled in with materials before closure).⁹⁷



Figure 7: Defense and civil waste binned by number of canisters and thermal power

Source: DOE, "Assessment of Disposal Options for DOE-Managed High-Level Radioactive Waste and Spent Nuclear Fuel," October 2014, Page 13, https://www.energy.gov/sites/prod/files/2014/10/f18/DOE_Options_Assessment.pdf

If the United States were successful in achieving disposal of defense-generated SNF and HLW, it might assist future repository initiatives for commercial SNF. Local and state officials from other locations could visit the repository to understand the safety considerations (as they can at WIPP for TRU waste disposal and international repository projects for commercial SNF like Onkalo in Finland) and see firsthand how such a facility is designed, constructed, and



operated to help inform their consideration of hosting a repository for commercial SNF. It would also give the United States additional design, licensing, and operational experience with a repository for HLW and SNF.

One potential concern about disposing of defense waste first is that it could be a more costly approach than disposing of commercial and defense waste at the same time. It would do nothing to defray the ongoing costs of commercial SNF storage, for example. The defense community may also worry about paying greater costs for proceeding first. However, given that the United States currently has no geologic repository for HLW or SNF licensed, much less in operation, these concerns may be misplaced. If defense waste does enjoy greater public acceptance, it could lead to earlier disposal of defense waste and reduce the total costs of storage at DOE sites. And this progress could ultimately benefit a disposal program for commercial SNF. In any case, DOE could conduct a full system analysis of possible scenarios and associated life cycle cost implications to inform the discussion.

The original decision in 1985 to comingle defense and commercial waste was based on fairly small perceived differences between the two options and under different circumstances. The BRC staff noted in a paper⁹⁸ that the 1985 evaluation showed a \$1.5 billion cost advantage to comingling and “not significant offsetting disadvantages.” But the BRC staff also noted that several developments occurred after the 1985 evaluation, which could alter the assumptions that were part of that conclusion, including ceasing the operation of production reactors at Hanford in 1987 that had been part of the US nuclear weapons program (thus, bounding that particular waste inventory), the successful opening of WIPP in 1998, and commitments by the US government to defense waste cleanup (e.g., the Batt agreement in 1995).

Achieving disposal of defense waste safely and with the consent of the state and local community would be a large step forward in the tortured history of US SNF and HLW management. It could help to pave the way for future commercial SNF repositories by providing the United States experience with the large-scale operations associated with a repository for highly radioactive waste. In addition, while defense waste was being disposed of, commercial waste would continue to cool in interim storage—reducing somewhat the challenges associated with its future transportation and disposal. On the other hand, this would then preclude the option to mix the commercial and defense waste streams for a potentially more efficient use of the mined repository volume.

As part of a phased, adaptive, consent-based approach,⁹⁹ it is also possible that a community and state that accepts defense-generated waste in an initial phase might consent to some commercial SNF at a later time. The French nuclear waste repository design, for example, has different zones in its underground tunnels for civil and military waste, and there is no reason in principle why the United States could not have separate zones for civil and defense waste at the same site. A community could initially agree to disposal of defense waste using a set of tunnels in one zone, and then later—pending consent—agree to a different set of tunnels and emplacement chambers in a separate zone for commercial SNF. For states that worry over whether accepting defense waste may eventually lead to them being forced to accept commercial waste at a later time, a legally binding agreement (such as the federal government’s agreement with New Mexico) blocking this scenario may provide the necessary assurance that their consent will in fact be required for disposal of any commercial waste.



IV. TRANSPORTATION OF NUCLEAR WASTE

According to the NRC, about 3 million packages of radioactive materials are shipped every year in the United States—by truck, train, plane, or ship. It is the joint responsibility of the NRC and the US Department of Transportation to regulate the safety of these shipments.¹⁰⁰ Almost all of these shipments are nuclear materials that are far less radioactive than commercial SNF. This chapter looks in greater detail at that transportation of three categories of nuclear materials: defense-generated TRU waste, spent naval reactor fuel, and commercial SNF.

The number of commercial SNF shipments in the United States is somewhat limited (past transfers have mostly been between nuclear power plants and for research purposes), but in Europe, and in particular France, there has been extensive transportation of SNF from nuclear power plants over many decades. The evidence to date suggests that transporting commercial SNF has been a safe enterprise: tens of thousands of SNF shipments around the world have been conducted safely.

This chapter uses the US experience with shipping defense-generated TRU waste to WIPP as a model for how a large-scale SNF transportation campaign to a disposal site could work. In addition, the transportation of spent naval reactor fuel to the Idaho National Laboratory for interim storage is briefly reviewed. Finally, the chapter discusses societal and institutional challenges associated with a scaled-up transportation program for US commercial SNF that should be addressed before such an initiative (associated with either a consolidated interim storage facility or a disposal site) is undertaken.

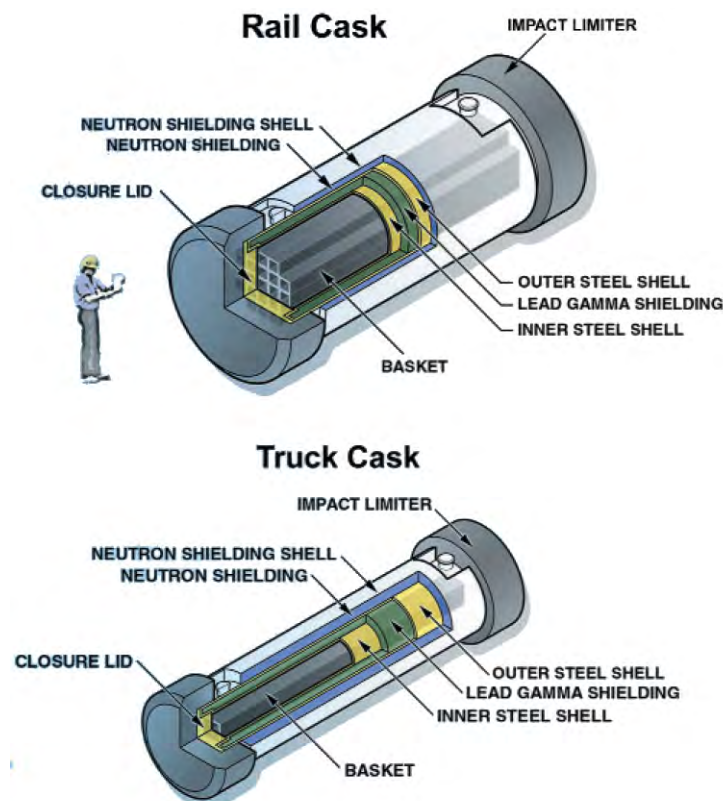
A. US and Global Experience with Commercial Spent Nuclear Fuel Shipments

The NRC has rigorous regulations pertaining to physical requirements for SNF transportation packages, as well as regulations governing the safety and security of transportation operations. Not only are these requirements the basis for estimates that the transportation of SNF can be safer than the transportation of other hazardous materials; the historical experience with SNF transportation in the United States and elsewhere has proved to be safe.

US SNF Transportation Packages and Associated Regulations

In order to meet NRC transportation regulations, package construction involves multiple layers of steel, metals, and other materials to provide structural strength and shielding from gamma and neutron radiation (see figure 8). The packages may be designed for transportation by truck or by rail. Truck packages, in general, carry fewer fuel assemblies than rail packages and are thus correspondingly smaller and lighter.¹⁰¹ Truck packages may weigh 25 metric tons and carry 0.5 to 2 metric tons of SNF. Rail packages, by contrast, may weigh 150 metric tons and carry 10 to 18 metric tons of SNF.¹⁰²



Figure 8: Rail and truck transportation casks for SNF

Source: NRC, <https://www.flickr.com/photos/nrcgov/48127898181/>

NRC regulations¹⁰³ require that “type B” containers—that is, designed to transport relatively large quantities of radioactive materials (e.g., SNF, HLW, and TRU waste)—must be able to survive four tests: impact (a 9 meter drop onto an “unyielding” surface), puncture (dropping the cask on a spike from a height of 1 meter), immersion in fully engulfing fire (for 30 minutes at an average temperature of 800°C), and submersion (in 15 meters of water). The NRC permits compliance with these requirements to be demonstrated using a variety of methods: quantitative analysis, tests of scale-model and full-scale packages or package components, and comparisons with existing approved package designs. In other words, full-scale testing of all transportation casks is not required.

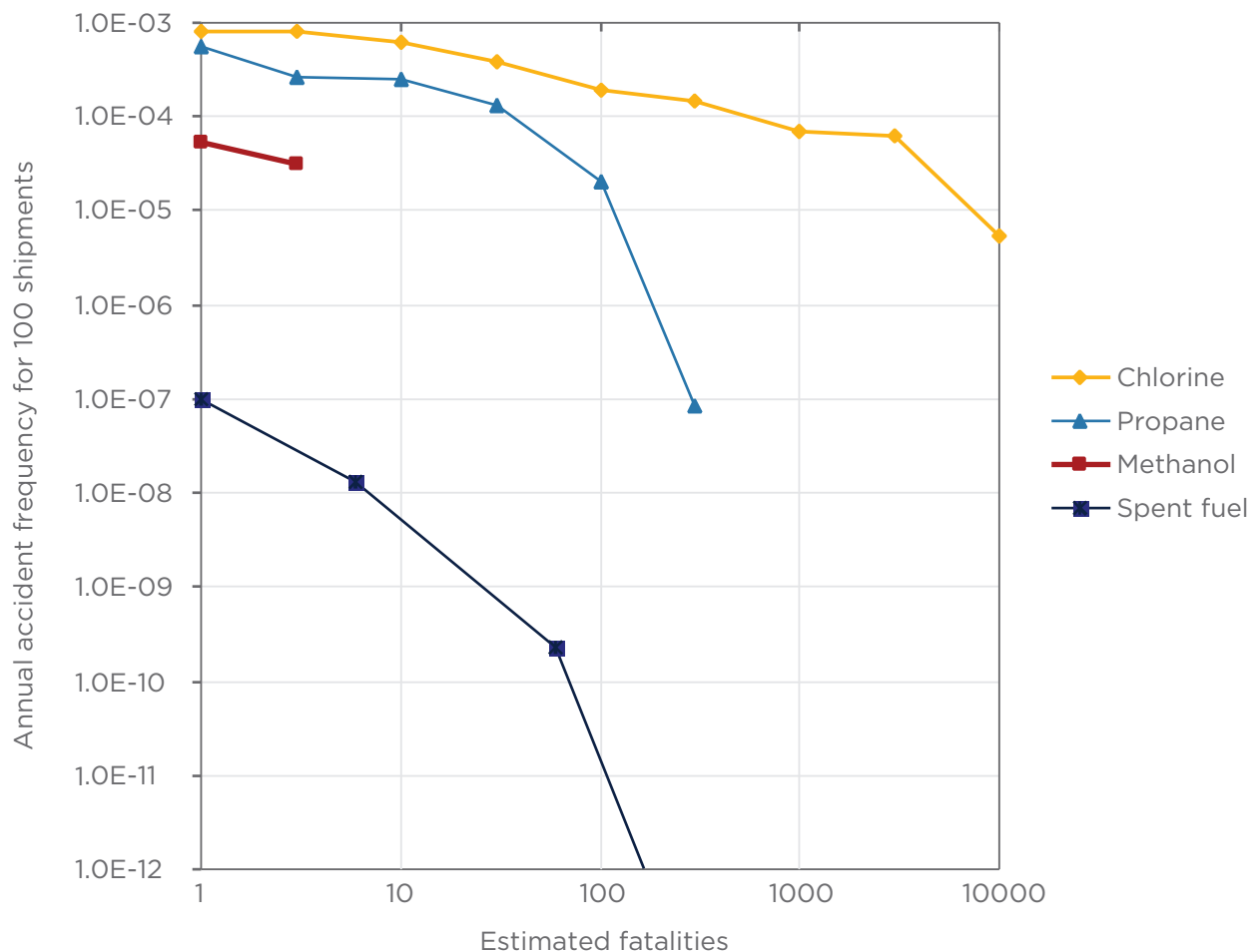
In the event of a severe transportation accident (e.g., a truck collision or train derailment) involving the transportation of a SNF package, the cask serves as one barrier to the release of radioactive material. Inside the cask, the metal tubes surrounding the SNF pellets serve as an additional barrier.



Comparison of Transportation Risks

In 2006, the US National Academies published a report, *Going the Distance*, on the transportation of SNF in the United States. The report concluded that the robust construction of SNF transportation packages, in combination with “rigorous regulatory requirements,” ensure that significant releases of radioactive material “are very unlikely except possibly in extreme accidents.” The authoring committee examined accidents associated with rail transport and comparative risk with the transport of three other kinds of hazardous materials: a flammable liquid (methanol), a flammable gas (propane), and a toxic gas (chlorine). The comparison is shown in figure 9.

Figure 9: Expected fatalities from hypothesized accidents during transport of hazardous materials and SNF



Source: Transportation Research Board and National Research Council, 2006, *Going the Distance?: The Safe Transport of Spent Nuclear Fuel and High-Level Radioactive Waste in the United States*, <https://doi.org/10.17226/11538>. Reproduced with permission of the National Academy of Sciences, courtesy of the National Academies Press, Washington, DC.



The analysis indicates that chlorine gas has the highest accident frequencies and fatalities of the four cases, as it is highly toxic and can be fatal if inhaled. It can be dispersed widely by wind and have adverse consequences even at low concentrations. However, chlorine is one of the most commonly manufactured chemicals in the United States and is used for bleaching purposes, pesticides, and water purification in both drinking water and pool water.¹⁰⁴

The consequences of explosions or fires from accidents involving propane or methanol transportation are expected to be more localized, and the expected risks are lower. Propane is used as a fuel (e.g., in place of natural gas) for space heating and water heating in homes, backup electricity generators, forklifts, and other purposes. It is also used as a feedstock in the petrochemical industry to produce products such as plastics and glues.¹⁰⁵ Methanol can also be used as a fuel, and as a result of new facilities coming online, the United States is projected to have the capacity for producing 9.4 million metric tons per year by the end of 2020.¹⁰⁶

The National Academies Committee projected much lower risks for the transportation of SNF by rail compared with the transportation of other hazardous materials by rail because of its robust packaging. The committee further noted that these findings might actually overestimate the risks, though it observed the public does not necessarily look at risks the same way that experts do, and expert assertions about risk may not be convincing to the public.¹⁰⁷

The NAS report also found that there are operational and safety advantages to shipping older spent fuel first. Many of the radioactive isotopes that are produced in a reactor have half-lives of days, minutes, seconds, or even less. These isotopes have all disappeared by the time SNF has been removed from cooling pools for either dry cask storage at the same site or for transportation to another site. Some radioisotopes in SNF have half-lives on the order of years, and these elements are nearly nonexistent after SNF has been aged for several decades. This is the basis for recommendations that older SNF be shipped first, which has been recommended by Nevada and others.¹⁰⁸

Global Experience with Transporting Commercial SNF

Worldwide experience with transporting SNF provides a good experiential knowledge base. A 2016 Oak Ridge National Laboratory (ORNL) report estimated that at least 25,400 shipments of SNF had been made worldwide (and likely more than 44,400) and that all of these had been undertaken without injury or loss of life.¹⁰⁹

In general, there have been few transportation accidents worldwide in the history of shipping SNF, and none has had significant radiological consequences. The safety record is due in part to the robust regulatory requirements for shipping SNF, including the cask requirements, as well as the high level of skill required of the people involved in package design, manufacture, and transportation.¹¹⁰

France has had more SNF and HLW shipped within its borders and to it than any other country in continental Europe. A 2001 paper estimated that 5,760 casks of SNF from within the country, broader Europe, and Japan had been transported to the La Hague facility for reprocessing.¹¹¹ There were several minor accidents involving SNF casks in continental Europe in the 1980s and 1990s,¹¹² but none led to a release of radioactive material.



B. Shipping Transuranic Waste to the Waste Isolation Pilot Plant in New Mexico

Over the last 20 years, the US government has transported TRU nuclear waste from DOE sites by truck over public roads, as shown in figure 10.

Drivers and carriers for WIPP shipments must meet stringent requirements and are subject to penalties if they deviate from specific procedures. DOE has worked with states to train thousands of emergency responders on plans specific to WIPP shipments. The shipment protocols and routes have been developed through cooperative efforts between states, tribal governments, and DOE. State officials are notified of shipments to WIPP before they enter the state, and those shipments are subject to inspections at state ports of entry.

Figure 10: Transportation routes from DOE sites to WIPP



Source: DOE, https://www.wipp.energy.gov/NewsandInfo_images/WIPP_Route_Map_2012_lrg.jpg

The safety record for WIPP shipments has been exemplary. The Western Governors' Association observed in 2016 that the more than 11,800 shipments from 12 DOE sites to WIPP involved very few, minor accidents and no radioactive materials release.¹¹³

As of August 2020, over 12,700 shipments of TRU waste have been successfully and safely shipped to WIPP,¹¹⁴ and this experience can serve as a template for future transportation of

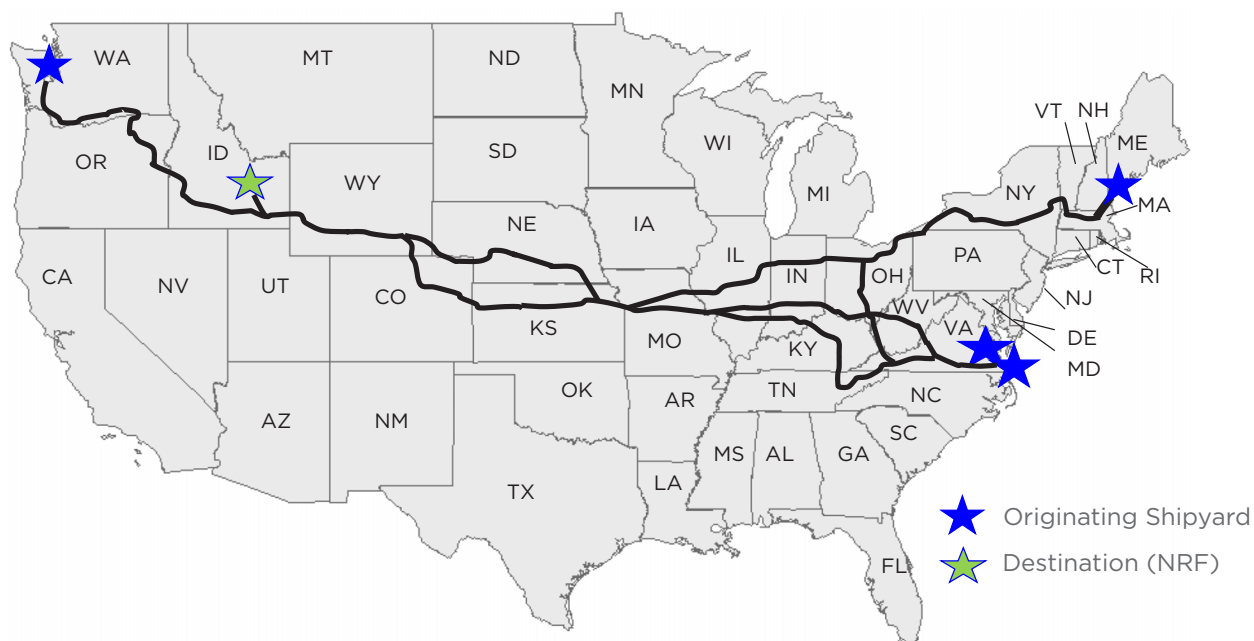


SNF to geologic repositories, though there are technical and logistical differences.

C. Transporting Spent Naval Reactor Fuel to the Idaho National Laboratory

The US Navy has shipped over 870 packages with naval SNF to the Idaho National Laboratory since 1957 (see figure 11 for typical shipping routes today). Unlike the WIPP program, which uses public highways, the navy transports its SNF to Idaho by private railroads. All of the naval fuel shipments have been accomplished without the release of radioactive material. In addition to the robust nature of the shipping containers, naval SNF itself has extremely rugged features due to operational needs (e.g., combat situations and protecting the health of crew on aircraft carriers and submarines).¹¹⁵

Figure 11: Typical shipping routes for US Navy SNF



Source: DOE, <https://www.nrc.gov/public-involve/conference-symposia/dsfm/2015/dsfm-2015-barry-miles.pdf>

As with the WIPP program, all activities have detailed emergency response plans in place and a sound exercise program to demonstrate that personnel are well prepared. Also similar to WIPP, exercises have been run with multiple state and tribal authorities to go over response scenarios to accidents involving the transportation of spent naval reactor fuel.

Today, the management of nuclear waste into and out of the state of Idaho takes place under the Batt agreement. Signed in 1995, this legal document can be looked at as an example of a functioning consent agreement between a state and the federal government for a consolidated interim storage facility (see box 4-1).



Box 4-1: The Batt Agreement

The Batt agreement—so-named for the Idaho governor, Philip Batt, who signed it in 1995—is the legal document that has governed transportation of spent naval fuel to INL for storage. As signed, it contained a number of provisions regarding other nuclear waste at INL, though the discussion below focuses mostly on the naval reactor fuel provisions. The agreement can be looked at as an example of a consent agreement between the federal government and a state for a consolidated interim storage facility, including provisions regarding the transportation of nuclear waste to and from the facility. The agreement has a number of measures that limit, for example, the number of shipments of navy spent fuel per year and the total (in metric tons of heavy metal) of spent navy fuel that can be shipped to INL through 2035.

The agreement originally stated that the navy would remove all naval spent fuel from Idaho by January 1, 2035, and that the sole remedy for the navy's failure to meet any of the deadlines or requirements set forth in the agreement would be the suspension of naval spent fuel shipments to INL. If spent navy fuel is not removed by January 1, 2035, there was also a payment obligation of \$60,000 for each day that the requirement has not been met. The agreement stated that the spent navy fuel at INL should be among the first SNF shipped to a permanent repository or interim storage facility.

There were other provisions, including the following:

- DOE was required to ship all TRU waste at INL out of the state no later than December 31, 2018.
- No additional SNF from the Fort St. Vrain nuclear power plant in Colorado (which ceased operation in 1989) was allowed to come to INL unless a permanent repository was opened.
- No commercial spent nuclear fuel could be shipped to INL, except for the Fort St. Vrain fuel under the conditions above.
- Construction of various waste handling facilities was to take place.
- Environmental remediation work was to be carried out at the Naval Reactors Facility.

The agreement has served as the foundation for continued negotiations between Idaho and the federal government, and the two entities have successfully negotiated additional provisions several times on nuclear waste management issues.¹¹⁶ While DOE has met most milestones¹¹⁷ in the 1995 agreement, all TRU waste was not removed from Idaho by the end of 2018. The state of Idaho did negotiate an agreement with DOE in 2019 that at least 55% of the TRU waste headed to WIPP would come from Idaho National Laboratory until all TRU waste had been removed from the state.¹¹⁸



D. Social and Institutional Challenges with a Large-Scale SNF Transportation Program

Observing that SNF has been transported safely in the past does not by itself guarantee that future performance will be the same. In particular, a campaign to move SNF from reactor sites to either an interim storage site or a repository would potentially involve many times the rate of shipments per year, casks per year, and metric tons of SNF per year.¹¹⁹ The mode of transportation would also be important: truck shipments would be more numerous and take place on public roadways, whereas rail shipments would be less numerous and take place on private rights-of-way.

Technical risk may not be the biggest barrier to public acceptance of a large-scale spent fuel transportation effort. Both the National Academies' *Going the Distance* report from 2006 and the 2012 BRC report recommended that efforts be made to reduce the social risks involved, including potential impacts along transportation routes on property values, tourism, anxiety, and other matters. NAS recommended that transportation implementers take early and proactive steps to help manage social risks by increasing public trust and confidence in transportation programs. The academies observed, among other findings, that the public generally perceived nuclear-related activities to carry higher risks than nonnuclear activities, that these risks are perceived as part of a broader context of social experiences and risk management processes, and that trust and confidence can play important roles in modulating these risks.

The 2012 BRC report noted that several of the 2006 NAS recommendations (e.g., full-scale cask testing) regarding social risks had not been acted upon¹²⁰ and observed that vigilance and independent regulation, such as by the NRC, will be required to maintain high safety standards in a scaled-up transportation program for commercial SNF. The manufacturers of transportation packages, for example, will need to continue to produce casks of the highest quality, and regulators and shippers will have to sustain similarly high levels of performance. Ensuring that a strong, independent regulator such as the NRC has authority over the transportation regime would help to achieve these ends, as well as the goal of public confidence in the program by not giving it any special treatment.



V. LIMITATIONS OF CURRENT LAW

As a result of the 1987 amendments to the NWP and other laws mentioned in chapter 2, the United States is severely constrained in what it can do to make progress on management and disposal of HLW and SNF. A few examples of limitations are discussed in this chapter: the US SNF management program does not have ready access to the Nuclear Waste Fund (NWF), there are potential legal challenges to the federal government contracting with private entities for consolidated interim storage projects, commercial SNF cannot legally be disposed of anywhere except for Yucca Mountain (and even site-specific activities are prohibited everywhere else), and support to states for SNF transportation-related activities is too limited.

Lack of access to the Nuclear Waste Fund. The US nuclear waste program was designed as a “polluter pays” structure where the nuclear power plant owners pay a fee (initially set at 0.1 cents/kWh, to be reviewed by DOE annually and adjusted as needed prospectively to recover the full costs of the waste program) to dispose of the SNF. For that reason, the program was different than other programs at DOE, which are funded out of general revenues (e.g., taxes). The intent was that the waste program be self-contained and not cost the taxpayer any money.¹²¹

Congressional documents make clear that the NWF was supposed to be a “trust fund” that would provide a predictable source of funding for the waste program and protect it from the uncertainty and policy changes inherent to the federal budget process.¹²² While the final version of the NWP still required congressional appropriations to fund the program, the language “appeared intended to encourage multi-year or lump sum appropriations.”¹²³

However, a series of budget-related laws passed by Congress—in particular, the Balanced Budget and Emergency Deficit Control Act of 1985 and the Budget Enforcement Act of 1990, as well as subsequent amendments to those laws—and their implementation have prevented the waste program from having access to the payments made by nuclear power plant owners. In effect, regardless of what the nuclear power plant owners paid into the NWF in a given year, the waste program received whatever Congress decided to appropriate from the NWF that year, which was invariably smaller and sometimes much smaller or even zero. In addition, the waste program is usually included under a budget cap that other programs at DOE (and elsewhere in the federal government) are under as well. This means that when the president submits a budget request, in order to increase funding for the waste program, other programs must be decreased in order to stay under that budget cap. Similarly, congressional appropriators must also take from other programs in order to increase funding for the waste program. This has meant that the waste program is in perpetual competition with other programs for money, despite the original intention by Congress for the waste program to be self-financed using utility payments into the NWF, whereas the other federal programs under the same cap are in large part funded by general revenues (i.e., taxes).

As commercial generators have paid over \$21 billion to date and interest has accumulated, the lack of appropriations has meant that the NWF balance has swelled to over \$40 billion



(and annual interest was projected to be over \$1.6 billion in 2020).¹²⁴ Nuclear power plant owners—and thus, ratepayers—have paid an extraordinary amount of money into a federal fund that has not been accessible to the waste program it was intended to fund. This limited access to waste funds has been a contributing reason for DOE’s failure to license and operate a repository for commercial SNF disposal.

Potential legal challenges to DOE contracting with private companies to implement consolidated interim storage projects. In the original NWPA, DOE was allowed to pursue consolidated interim storage sites—called monitored retrievable storage (MRS)—and DOE conducted a search for suitable sites. It ultimately identified three options in Tennessee and selected a site on the Clinch River in the Roane County portion of Oak Ridge. The governor of Tennessee opposed the facility, however, and the state sued DOE over the project.

As part of the 1987 amendments to the NWPA, the Tennessee site selection was “annulled and revoked,” and authority for a new DOE-directed MRS siting process was added. However, the ability to site and develop an MRS facility was closely linked to the repository development process. For example, section 148 of the NWPA prevents the construction of an MRS facility until the NRC has issued a license for the construction of a repository and imposes a limit of 10,000 MTHM of SNF and HLW at an MRS facility until a repository under the NWPA begins operation. Finally, no more than 15,000 MTHM of SNF can be at the MRS facility at any time.

Depending on the legal interpretation of section 135(h) of the NWPA, DOE would also appear to be prevented from contracting with private entities to do consolidated interim storage projects, like the ones that have been proposed in Texas, New Mexico, and Utah.¹²⁵ For this reason, recently proposed legislation includes amendments to delete that section to remove any legal uncertainty surrounding the issue.¹²⁶

As has been observed in other reports,¹²⁷ consolidating SNF in dry casks at interim storage facilities would provide multiple benefits, including

- allowing local communities with shutdown nuclear plants to reclaim all of their land, eliminate security-related site costs; and complete site decommissioning (terminating their existing NRC licenses related to SNF also would reduce DOE’s costs for maintaining many separate storage facilities);
- helping the federal government begin meeting its commitments to take ownership of SNF, reducing current costs to US taxpayers out of the US Judgment Fund; and
- providing time for additional cooling of SNF while preserving disposition options for the future.

However, current law constrains this option and the waste management benefits it would entail. The law was written this way to avoid having an MRS site become a de facto repository, and it is possible that without any progress toward geologic repositories, states may be less willing to host a consolidated interim storage facility. One disadvantage to moving SNF to a storage facility (private or federal) not collocated with a repository is that it would also require additional costs and time for two separate transportation campaigns.



DOE's severely limited ability to consider repository sites other than Yucca Mountain.

The framers of the NWPA intended there to be two repositories—one in the West and one in the East—and established a program and schedule for finding sites for both. However, the 1987 amendments postponed the siting of a second repository indefinitely, terminated ongoing research into crystalline rock sites (e.g., geologies in the east), and merely required a report on the need for a second repository by 2010. That report was published in 2008 and assessed that while Yucca Mountain could likely dispose of several times the 70,000 MTHM limit from the NWPA, the country would need another repository if this capacity allowance was not raised.¹²⁸ In the same report, the secretary of energy recommended that, consistent with legislation proposed in 2007 by the Bush administration, the statutory capacity limit of 70,000 MTHM be removed, which would defer the urgency in evaluating issues associated with a second repository.

As the 1987 amendments directed DOE to solely focus on Yucca Mountain, DOE is not legally allowed to conduct site-specific activities with respect to a second repository without express approval by Congress. Thus, DOE cannot work with private companies at non-Yucca Mountain sites if that work is directed at potential development of a repository rather than generic development of a new disposal technology—even with the consent of a host state and local communities.

Insufficient support to states for SNF transportation activities. The language in section 180(c) of the NWPA, and DOE's interpretation of it, does not allow states to be adequately reimbursed for the costs incurred as part of SNF transportation. DOE only allows reimbursement to states from the NWF for "training" related to SNF. However, there are other costs that states incur—e.g., the cost of inspecting SNF packages—that do not fall under DOE's interpretation of "training."¹²⁹ Language in section 16 of the WIPP Land Withdrawal Act, by contrast, is more flexible and allows states to recover their costs related to transport of TRU waste shipments to WIPP.

Options for addressing these limitations are discussed in the next chapter.



VI. ACTIONS FOR POLICY MAKERS TO CONSIDER

Though there is a paralysis in the pursuit of a disposal path for US SNF and HLW, it is not necessarily going to compel a fix by itself. Commercial SNF is safe and secure where it is, and utilities have little incentive to drive action as they are no longer paying the NWF fee and almost all of the costs that they are incurring for interim storage at reactor sites are being paid for by the US taxpayer out of the US Judgment Fund. Further, those payments out of the Judgment Fund do not have negative repercussions for DOE, which would otherwise drive greater urgency at DOE on the waste disposal program.

But a variety of factors, such as the continued use of zero-carbon nuclear power to further climate goals, weigh on the urgency to forge a path forward on improving the management of SNF and HLW in the United States. Based on the findings of this report, several possibilities for how the federal government could make progress on this issue of national importance are provided here.

Option 1: Create a New Organization Whose Sole Mission Is Nuclear Waste Management (and Whose Approach Is Consent Based)

Congress could create a new organization whose sole mission is to manage nuclear waste and one that has full access to past and future payments from nuclear power plant owners. This is not a new idea. The concept was suggested as early as 1977,¹³⁰ and it appeared prominently in a 1982 Office of Technology Assessment report,¹³¹ which noted the structural challenges of having the waste program at DOE and recommended a separate organization be given responsibility. The same 1982 report found that the greatest obstacle to the waste management program was the “severe erosion of public confidence in the Federal Government that past problems have created.” The report noted that the federal government’s credibility was questioned as to whether it would stick to any waste policy through changes of administration, whether it had the institutional capacity to carry out a technically complex and politically sensitive program over a period of decades, and whether it could be trusted to “respond adequately to the concerns of States and others who will be affected by the waste management program.” These concerns appear relevant nearly 40 years later, which argues for a new approach.

A public corporation chartered by Congress was also the preferred alternative to DOE management in a 1984 report to the secretary of energy.¹³² More recently, four reports, from MIT (2011), the BRC (2012), the Bipartisan Policy Center (2016), and Stanford-George Washington Universities (2018), all recommended that a new organization be created that was dedicated solely to nuclear waste management.¹³³ There was general alignment in these four reports that such an organization should operate on a phased, adaptive, consent-based approach and should immediately begin efforts to identify sites for consolidated interim storage facilities and geologic repositories.

Part of the reason the current federal structure for nuclear waste management is not working



is that—fair or not—DOE is not trusted by states or tribes. This is in part because of DOE's actions in the 1980s but also inherited distrust from its predecessor, the Atomic Energy Commission. Another problem with trying to sustain a multidecade repository program is that DOE's leadership and policy direction are subject to presidential elections and political appointments. An additional issue is that the waste program, which never got above \$600 million in annual funding, resides within a ~\$38 billion/year cabinet-level agency with many competing priorities. An organization separated from all of the other work at DOE and with full access to past and future NWF fee payments would by itself be a large step forward for the US waste program.

In looking for a better approach, the United States can benefit from the experiences of other countries, such as Finland, which is the farthest along of any country in its disposal program and is now constructing a repository. Finland also has a single purpose organization for nuclear waste management that has access to the funding it needs to succeed.

The Canadian program is also making good progress and at the end of 2020 is down to two potential sites under consideration for a repository. The Canadian NWMO provides a closer-to-home example of an organization that is solely focused on nuclear waste management and operates on a phased, adaptive, consent-based approach. The utility-owned NWMO's activities are paid for by the Canadian utilities, and the organization does not have to go through a budgeting process every year comparable to the US waste program's structure. The NWMO's siting work has proceeded in phases—e.g., with sequentially more intensive site characterization activities for the locations under consideration in each subsequent phase—and has advanced sites to successive phases with the consent of the potential host communities. That is, communities were able to withdraw themselves from consideration at each step. As additional technical information is learned about each site, and feedback from the public is gathered and negotiations with units of government continue, the NWMO has had the flexibility to adapt as needed, including the adjustment of planning milestones and the narrowing of sites under consideration. A mitigating simplification in the Canadian case is that all of the potential repository sites are in the same province, as are the large majority of Canadian nuclear power plants.

While there are no guarantees that a consent-based approach will succeed, the example of WIPP provides some evidence that it can work in the United States. This report concludes that the balance of evidence suggests the United States should try a consent-based approach. Previous studies, such as the 2012 BRC report, reached the same conclusion: a consent-based approach appears to be more promising than another forced siting process, though with no guarantee of success. This can either be looked at as the right approach for a democracy or a practical acknowledgment that states have a variety of different avenues to oppose facilities and programs that they do not want within their borders.¹³⁴

The final report of the BRC in 2012 did not make a recommendation as to what specific form “consent” should look like, and this report concurs that the form of consent may very well differ substantially from one case to another. Correspondingly, codifying what consent means in law could lead to problems in the future. As the BRC suggested, states may want to negotiate legally binding agreements between themselves and the federal government



to “have confidence that they can protect the interests of their citizens.” Idaho, for example, entered into such an agreement with DOE and the US Navy in 1995 for interim storage of nuclear waste. A state may also want some kind of regulatory authority over a repository facility, just as New Mexico has RCRA authority over the WIPP facility. This authority comes from the Land Withdrawal Act (Public Law 102-579) that Congress passed in 1992, and similar legislation could be contemplated for states that would like similar power over a geologic repository facility. These are just two examples of working with states on a consent basis, with different arrangements in each case; this argues for leaving the law flexible enough to adapt to the specific circumstances associated with particular potential sites.

Interim storage is going to be needed for decades while new geologic repositories are in the process of being characterized. Chapter 5 discussed some of the benefits that consolidated interim storage projects offer to the nation in terms of waste management, but current law presents potential legal challenges to DOE entering into contracts with private companies (e.g., the consolidated interim storage projects in Texas, New Mexico, and Utah). Congress should ensure that the new organization is able to pursue consolidated interim storage projects and enable the organization to use fee payments from nuclear plant owners to support those projects.

S.1234 from the 116th Congress provides a good starting point for these legislative discussions. It would establish an independent agency to manage US commercial SNF, rather than have DOE carry out this function. The new entity would be headed by an administrator selected by the president and subject to Senate confirmation.

The bill would create a new working capital fund in the US Treasury, and fees paid into it by utilities would be available to the agency without further appropriation. However, access to the existing balance in the NWF would still be subject to appropriations and overall constraints on discretionary spending. While making future fee receipts directly available would not completely solve the funding problem, it would be a substantial advance in US nuclear waste management by enabling the new federal entity to carry out its work and giving states and utilities greater confidence that the agency will be able to deliver what it promises. The new agency would be able to use the fee payments for both geologic repository and consolidated interim storage projects.

S.1234 directs the new organization to build a pilot storage facility to hold spent fuel from decommissioned nuclear plants and emergency shipments from operating plants. It also establishes siting processes for both storage facilities and repositories. If the secretary determines that separate waste facilities are necessary or appropriate for defense waste, the administrator may site them in accordance with the process described in the bill.¹³⁵

Option 2: Improve the Funding Structure of the US Nuclear Waste Program

Sustained and consistent funding is needed to support a successful multidecade repository program that involves site characterization, licensing, construction, operation, and closure. Creating a new organization (option 1) with access to past and future NWF fee payments by utilities would fix the current problem of the waste program lacking access to needed funds.



Even giving a new organization access to future payments, as S.1234 from the 116th Congress does, would be a substantial improvement. However, the creation of a new organization may take years for Congress to reach agreement on, and during that time Congress could pursue avenues to at least partially improve the funding structure for the US waste program.

There have been past legislative efforts to connect the receipt of payments to the NWF with funding of waste program activities.¹³⁶ In 2001 DOE also published a report that discussed several possible ways to improve the budgetary system, including reclassifying NWF spending as mandatory.¹³⁷ It is suggested here that policymakers consider at least two specific policy formulations:

1. *Reclassify the annual NWF fee from its current mandatory receipt to discretionary offsetting collection.*

The payments by utilities into the NWF could be collected specifically to offset discretionary spending on the waste program. In other words, DOE could modify how it collects NWF payments from utilities, and appropriations language could better connect the fee collections with spending on the waste program. Money appropriated for the waste program that was offset by these fees would not use up any of the budget cap space of the agency the program lives under, removing it from competition with other budget priorities.

In a similar manner, HR.2699 (passed by the House as HR.3053 in the 115th Congress), incorporates a mechanism whereby after the NWF fee is resumed, the total amount of NWF fees collected on an annual basis would be limited to 90 percent of appropriations, and the receipts would be reclassified to offset these appropriations. The collection would thus offset most of the annual appropriations for the nuclear waste program—largely freeing it from direct competition with other programs for budgetary space.

2. *Create a separate budget spending category for waste management.*

Within congressional budget caps, there are some programs that are at least partially self-financed and some of these programs have a separate budget line to recognize this and prevent them being in competition with other programs (e.g., Social Security and the Postal Service). Creating a separate budget spending category for nuclear waste management, as it is supposed to be a self-financed program, would recognize that the waste program is fulfilling statutory and contractual obligations of the federal government. The failure of these contractual obligations to utilities costs billions of dollars paid out of the Judgment Fund. Congressional budget committees could, for example, include in budget resolutions a line specifically for the waste program that recognizes the self-financing nature of the program, and any budget priority tradeoffs (i.e., decreasing the nuclear waste program funding to increase another program's funding or the reverse) would have to be made at the top level of the budget process by OMB and the budget committees. The federal government could then decide what fraction of the total discretionary cap (on the order of \$650B) should be spent to honor a clear contractual obligation of the federal government and stop the drain on



the unappropriated Judgment Fund.

As former Under Secretary of Energy Robert Card told a congressional committee in 2004, the contractual arrangement of a payment for service justifies “special consideration” for the nuclear waste program in the budget process.¹³⁸

A 2011 paper for the BRC included discussion of a potential option to administratively reclassify the NWF receipts as “offsetting collections” and thus be implemented without the need for new law.¹³⁹ If the budget scorekeepers—OMB, CBO, and the House and Senate Budget Committees—were to agree, the congressional appropriations committees could continue to set the annual spending levels for the waste program, but those appropriations would be offset by the fee payments so that the program would score “net zero” for budget purposes and thus not have to compete with other programs under the budget cap. However, given that this action has been available for many years and has not been acted upon, this may be a de facto response from the budget scorekeepers that they would prefer Congress make this change legislatively.

There are other ways that Congress and/or budget scorekeepers could improve the funding of the waste program so that it functions closer to how it was originally intended.¹⁴⁰ Of concern, the payments to the NWF were stopped in 2013 by a federal court, and utilities will be loath to restart the fees if they have no confidence that the payments will actually be used for their intended purpose. Utilities had been paying nearly \$750 million into the NWF each year, and in some of the same years there were no appropriations for Yucca Mountain or any other repository or consolidated interim storage effort. Fixing the budgetary structural problems of the US waste program is thus keenly important for states and local communities to have the confidence that the federal government will spend the money necessary to honor its obligations.

Since the utilities are not currently paying a fee into the NWF, this obviates the funding fixes discussed in the BRC paper and in legislation such as S.1234 and HR.2699. These approaches are based on the presumption that the federal government is collecting annual fees that can be directly accessed to fund the waste program, which is not the case. But even with access to annual waste fees when they are resumed in the future, anticipated program expenditures will ultimately require a way for the US nuclear waste program to access the corpus of the NWF.

Option 3: Pursue Disposal of US Defense Waste First

The original NWPA had the flexibility to allow one of the two repositories to be dedicated to defense waste disposal, with the other devoted to commercial waste disposal, or either could dispose of a mixture of defense and commercial waste.¹⁴¹ New repository sites for defense waste can also be pursued under section 8 of the NWPA, but to dispose of commercial SNF at the same site at a later time, the law would have to be amended. A US waste strategy could include pursuing disposal of defense waste at a repository site first, with the possibility of the same site disposing of nondefense waste during a later phase, pending consent and potentially any needed changes to the law.

There are several other reasons why it may make sense to pursue disposal of defense waste



before commercial SNF:

- Potentially greater public acceptance due to the national security missions involved
- A smaller and cooler waste inventory
- Less of an argument for the waste to be retrievable for potential reprocessing, as the plutonium has already been removed from defense HLW
- As the defense complex is no longer running production reactors or reprocessing facilities, the inventory is relatively bounded

Defense waste disposal is also not paid for by nuclear power plant operators (and thus not paid out of the NWF) but instead out of defense spending, which is under a different budget cap. Disposal of spent naval reactor fuel could help US naval operations by fulfilling the federal government's commitment to Idaho to remove naval reactor SNF from the state by 2035 (or at least some progress toward opening a repository for defense waste would help with the federal government's ongoing negotiations with Idaho). Disposal of defense HLW would also help fulfill commitments to Idaho, South Carolina, and Washington for federal cleanup of sites involved in nuclear weapons activities during the Cold War.

The engagement of the secretary of defense or the secretary of the navy with states could be particularly helpful. The secretary of defense holds a position of great respect and consequence in the United States, and his or her advocacy would be helpful toward obtaining public acceptance for disposal of defense waste by explaining how, particularly for spent naval reactor fuel, it would serve national security missions.

As implied above, there might be a benefit to future commercial SNF disposal efforts from first demonstrating disposal of defense waste. It would provide a proof of principle for HLW and SNF disposal—just as WIPP has done for TRU waste disposal—including a test of the NRC licensing process. In addition, an operational repository for HLW and SNF would provide the United States with additional design, construction, and operational experience with geologic repositories and allow for visits in the future from state and local officials who might be considering hosting a commercial SNF repository.

Under a truly phased, adaptive, consent-based strategy, there could still be the flexibility and capability to dispose of defense waste and commercial waste in the same repository—e.g., in a separate underground zone—if consent is given by the host community during a later phase.

Option 4: Take Steps to Prepare for a Large-Scale Transportation Program

To date, the annual rates of US transportation of commercial SNF have been relatively small compared with what a future effort to ship SNF to either consolidated interim storage or a geologic repository might entail. Rather than wait until either is imminent, the US government could pursue near-term efforts to prepare for the eventual larger-scale transport of SNF and HLW to consolidated interim storage and disposal facilities. This overarching recommendation was made by the BRC in 2012, along with several individual transportation-related



recommendations that have not been acted upon.

In particular, BRC recommended that the NWPA be amended to give the body responsible for waste management similar broad authority as DOE had when supporting large-scale transportation to WIPP. The specific problem that the BRC recommendation would address is language in section 180(c) of the NWPA that is too restrictive and does not allow states to recover the full costs for the planning and operations related to commercial SNF transportation through their borders, even though the law says costs related to disposal of HLW and SNF should be paid by those generating the waste (i.e., not the states it may travel through).

More recently, the Western Interstate Energy Board's (WIEB's) High-Level Radioactive Waste Committee, comprised of nuclear waste transportation experts from 10 western states' energy, public safety, and environmental agencies, issued a series of policy papers in 2018 toward developing a safe and publicly acceptable system for transporting SNF and HLW. In particular, the WIEB committee issued recommendations on social risks, full-scale cask testing, origin site transportation coordination, and funding for state and local development and implementation of a transportation system. The WIEB has particular expertise in nuclear waste transportation given the thousands of TRU shipments to WIPP, which is located in one of the WIEB member states, New Mexico.

DOE could review these proposals to consider endorsing and implementing the committee's various recommendations as part of addressing the institutional and social risks involved with a scaled-up transportation program to a waste site. More generally, DOE could identify a process for consideration of and response to the transportation-related recommendations of independent groups including the National Academies, the BRC, and the Western Governors' Association. DOE could then either take action or, where it does not have the needed legislative authority, submit a proposal to Congress.

Option 5: Update Generic Regulatory Standards for Future Geologic Repositories

The United States has two sets of federal regulatory standards for SNF and HLW disposal—one for Yucca Mountain and one for all other sites—and the substantive differences between the two, such as periods of coverage and release/exposure limits, have been problematic. Resolving some of the inconsistencies between these regulations and ensuring that the generic regulations are flexible enough to cover different approaches (e.g., boreholes) is important for future nuclear waste disposal projects. The update should also be done before multiple sites are examined to help with public confidence that regulatory standards are not being lowered in individual cases to enable sites to qualify that otherwise would not be deemed safe.

For example, EPA's generic protection standard for WIPP covers 10,000 years after closure of the repository, whereas the Agency's Yucca Mountain-specific standard extends to 1 million years. Other nations have pursued time periods of compliance in between these two time frames.¹⁴² It has also been suggested that new approaches could rely on quantitative analyses for shorter periods of time¹⁴³ (e.g., up to several thousand years) and rely on more qualitative factors for longer periods of time. Another difference is that the generic standard relies on



radionuclide release limits, whereas the Yucca Mountain standard uses individual dose limits.

The NRC promulgated generic regulations for high-level waste disposal at 10 CFR Part 60 in 1983; DOE's site selection guidelines at 10 CFR Part 960 were first promulgated in 1984; and EPA's 40 CFR Part 191 regulations for generally applicable environmental standards for high-level waste disposal were promulgated in 1985. However, US and international thinking on standards for geologic repositories has evolved in the intervening decades.¹⁴⁴ EPA, NRC, and DOE could update their respective regulations—or Congress could direct them to do so—as part of preparations for future repository siting efforts.

Option 6: Negotiate an Agreement with Nevada on Yucca Mountain

The phased, adaptive, consent-based approach to siting new repositories should begin as soon as possible. However, setting up a new organization (as in option 1) may take years, and beginning early site characterization will take additional time. Furthermore, it will take many years for new sites to reach a phase where they have the same level of investigation and technical characterization as Yucca Mountain. An option that the federal government could pursue, concurrent with efforts to begin new siting efforts, is to try to negotiate an agreement with Nevada to investigate the disposal of a limited waste inventory at Yucca Mountain.

Given the long, bitter history over Yucca Mountain, a negotiated solution between the federal government and Nevada regarding the site will be difficult. The state legislature is firmly opposed to the repository concept that was proposed in the 2008 license application¹⁴⁵ to the NRC. While there is no guarantee the state and the federal government can negotiate a smaller repository program that is acceptable to both sides, it also does not appear that these types of discussions have been tried in the past. Addressing the state's technical concerns and ending the federal government's attempt to "jam it all down Nevada's throat" could be a necessary precondition.

One initial step that Congress could take is to recognize that the main thrust of the 1987 amendments to the NWPA—jettisoning the second repository process and prematurely ending the selection process for the first repository—was wrong and to begin undoing the damage they created by removing those aspects of the NWPA. In particular, Congress could eliminate the restriction of provisions in the NWPA to Nevada and Yucca Mountain that came from the 1987 "Screw Nevada" bill. It would also help if Congress explicitly acknowledged that the 1987 amendments effectively abandoned the 1982 compromise and short-circuited the siting process in a way that went against the intentions of the NWPA authors and that that decision made the US waste program completely dependent on the fate of a single site with attendant risks. The amendments in 1987 not only violated the siting equity agreements, they eliminated all of the redundancies in the 1982 program that gave some basis for confidence that a repository would be available at some site within a reasonable time. At least part of Nevada's initial response to the 1987 amendment was based on the disrespect it showed toward the state.¹⁴⁶ Undoing the 1987 amendments to the NWPA would also correct a terrible precedent: Congress should not be the body that does repository site selection.

In the event that discussions over an agreement begin, Nevada would likely want to negotiate legally enforceable provisions regarding transportation routes, the repository design, and the



specific waste inventories that would be involved (e.g., types, amounts, locations) to address its stated concerns. The state will—rightfully—be suspicious of any attempt to negotiate even a limited repository program at Yucca Mountain, worrying that a second “Screw Nevada” bill may take place at a later time and the federal government will again try to force the state to take all of the nation’s HLW and commercial SNF.

Nevada’s congressional delegation has proposed the Nuclear Waste Informed Consent Act (NWICA),¹⁴⁷ which would give any potential repository host state (including Nevada) a form of consent before appropriations are drawn from the NWF for the construction of a repository. The bill could be read as a willingness to complete the licensing of Yucca Mountain—where the state has lodged over 200 contentions that are awaiting disposition with the Atomic Safety and Licensing Board—if the state has a consent provision at the end of that process. However, even passing the NWICA into law and continuing with the licensing of Yucca Mountain would carry some risk for Nevada: a future Congress could amend the federal law carrying the NWICA consent standard and either alter it or eliminate it entirely. The specific approach to consent in the NWICA, which effectively gives multiple entities within a repository host state absolute vetoes over the project, is also a much higher bar than organizations such as the National Governors Association suggested as the part of the deliberations leading up to the 1982 NWPA, and other states may not want this approach to be applied to other states or to themselves.¹⁴⁸

A site-specific approach that could give Nevada stronger protections could be along the lines of a court-enforceable agreement similar to the “Batt agreement” in Idaho, discussed in chapter 4. Such an agreement could incorporate elements of the NWICA as desired by Nevada and by its nature prevent a future Congress from invalidating it, as well as preclude a future administration from altering it to match policy or political whims. The Batt agreement—between the state of Idaho, DOE, and the US Navy—set parameters for nuclear waste management at INL and could serve as a template structure for an agreement between Nevada and DOE (and if naval SNF is part the investigations, possibly the US Navy).

The “consultation and cooperation” agreement between DOE and the State of New Mexico for the WIPP repository, discussed in chapter 3, is another possible template for negotiations on a phased, adaptive path to potential licensing and operation. It is also possible that the state of Nevada might want regulatory authority over Yucca Mountain in a similar manner to the power that the State of New Mexico has through the WIPP Land Withdrawal Act (namely, RCRA authority). If desired by the state, passing legislation giving Nevada similar authority to regulate the site could also be part of a broader compromise.

It would also need to be absolutely clear as part of any negotiations that additional repositories will be required beyond Yucca Mountain. Even if Nevada is willing to accept some nuclear waste at the site, it will almost certainly not accept all of it. The principle of having more than one repository for the nation’s HLW and SNF inventory—at the heart of the 1982 NWPA compromise—is still appropriate and the right approach today. In the end, a negotiated solution may not be possible because of the decades of contentious history, but it is worth trying—a licensed, operating repository negotiated through agreements for even a limited HLW and/or SNF inventory could still serve local, state, and national interests. It could also increase the confidence of states considering consolidated interim storage facilities that the



United States is capable of developing repositories, and such interim sites will not wind up as permanent ones.

The local community that would host a repository at Yucca Mountain—Nye County—sees a project there as potentially safe¹⁴⁹ and is interested in the economic development involved with its construction and operation, as the WIPP project provided to Carlsbad in New Mexico. In 2019, a majority of the counties in Nevada indicated that they would like to see the NRC licensing of Yucca Mountain completed;¹⁵⁰ however, a majority of citizens in Nevada are against the proposed project.¹⁵¹ The state of Nevada’s specific concerns regarding social and institutional risks, transportation routes, repository design details, and other considerations (such as being singled out in the NWPA) would almost certainly have to be addressed as part of any discussions to gain broader public acceptance for a negotiated agreement.



VII. CONCLUSIONS

Objectively, the United States currently has no discernible disposal program for HLW and SNF. There have been no appropriations from the NWF for Yucca Mountain—the only site that has been approved under current law (i.e., the NWPA) for disposal of commercial SNF—since 2010. The FY 2020 appropriations bill funded waste management efforts at \$60 million for generic research—effectively a smaller amount than was appropriated to DOE for waste management in 1976.¹⁵² As the country with the largest nuclear reactor fleet in the world, the United States ought to have a robust nuclear waste disposal program. Several other observations are worthy of attention:

- In the absence of congressional action, payments out of the Judgment Fund to utilities storing spent nuclear fuel on-site will cost taxpayers tens of billions of dollars over the coming years. This will not hurt the agency responsible for commercial nuclear waste management (DOE), but communities with shutdown nuclear plants will be unable to reclaim all of their land.
- The cleanup of Cold War nuclear weapons sites in Idaho, South Carolina, and Washington is projected to be a decades-long effort costing hundreds of billions of dollars. However, even if all of the processing and remediation efforts at the sites were completed in 10 or 20 years, the defense SNF and HLW waste packages would have nowhere to go.
- The US Navy will continue to rely on nuclear reactors to power its aircraft carriers and submarines, as there is no viable alternative energy source, and as a result spent naval reactor fuel will steadily accumulate at INL. The 2035 deadline for removal of naval SNF from Idaho in the legally enforceable Batt agreement, however, poses financial and operational risks to the US Navy.
- For the foreseeable future, the United States will continue to use research reactors and isotope production facilities. These activities will continue to produce a comparatively very small stream of SNF and HLW that will nevertheless require a disposal pathway.

All of the options presented in chapter 6 could, largely independent of one another, help the United States make progress on management of SNF and HLW. DOE can take some of these actions on its own under existing legal authorities, such as pursuing a repository for defense waste first. Other actions may need agreement between the budget scorekeepers—the White House Office of Management and Budget, the Congressional Budget Office, and congressional budget committees—such as improving the budget structure for the waste program. But ultimately, Congress will have to amend existing laws in order for the US SNF and HLW management program to succeed. Given the federal government’s statutory and contractual obligations for timely disposition of SNF and HLW, mounting liabilities for failure to meet those obligations, and the critical role of nuclear energy in meeting climate goals, Congress in particular should not simply leave the US SNF and HLW disposal program at a standstill.



NOTES

1. See documents associated with the recent Paris Agreement: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> and <http://www.b-t.energy/>.
2. Data from 2020 *BP Statistical Review of World Energy*.
3. Staffan A. Qvist and Barry W. Brook (2015) "Potential for Worldwide Displacement of Fossil-Fuel Electricity by Nuclear Energy in Three Decades Based on Extrapolation of Regional Deployment Data," *PLoS ONE* 10, no. 5 (2015): e0124074, <https://doi.org/10.1371/journal.pone.0124074>.
4. IEA, "Steep Decline in Nuclear Power Would Threaten Energy Security and Climate Goals," May 28, 2019, <https://www.iea.org/newsroom/news/2019/may/steep-decline-in-nuclear-power-would-threaten-energy-security-and-climate-goals.html>.
5. This report is hardly the first to note this. For example, a 2018 publication from Stanford University and George Washington University, "Reset of America's Nuclear Waste Management: Strategy and Policy," makes many of the same high-level observations and some similar recommendations. This report draws on many of the observations and recommendations from previous reports (cited later) as well as the Stanford University–George Washington University report, which is available at <https://cisac.fsi.stanford.edu/research/projects/reset-nuclear-waste-policy>.
6. EIA, "Electricity Explained: Electricity in the United States," last updated March 2020, <https://www.eia.gov/energyexplained/electricity/electricity-in-the-us.php>.
7. The National Conference of State Legislatures has produced a list of states and restrictions on new nuclear power plant construction: <http://www.ncsl.org/research/environment-and-natural-resources/states-restrictions-on-new-nuclear-power-facility.aspx>.
8. National Research Council, *Disposition of High-Level Waste and Spent Nuclear Fuel: The Continuing Societal and Technical Challenges* (Washington, DC: The National Academies Press, 2001). From page 1: "Tactical opposition by groups opposed to nuclear power has been a factor in the slow progress toward arriving at societal agreement on acceptable approaches to radioactive waste management...some opposition groups have made it a policy to refuse constructive participation in seeking solutions until or unless a prior commitment to close down nuclear power is made."
9. "Transuranic" means an element having an atomic number greater than uranium (92).
10. See pages 174–78 of Transportation Research Board and National Research Council's *Going the Distance? The Safe Transport of Spent Nuclear Fuel and High-Level Radioactive Waste in the United States* (2006).
11. In this report, fuel that has been irradiated in a reactor and has not been reprocessed will



be referred to as “spent nuclear fuel,” and the highly radioactive waste resulting from the reprocessing of spent nuclear fuel will be referred to as “high-level radioactive waste” (or “high-level waste”). This convention follows definitions from the Nuclear Waste Policy Act of 1982, as amended.

12. MTHM is a measure of the mass of nuclear fuel and refers to elements with atomic numbers greater than 89. Other parts of SNF, such as the cladding or other structural materials, are not used to calculate the MTHM value.
13. GAO, “Benefits and Costs Should Be Better Understood before DOE Commits to a Separate Repository for Defense Waste,” 2017, <https://www.gao.gov/assets/690/682385.pdf>.
14. Congressional Research Service, “The Manhattan Project, the Apollo Program, and Federal Energy Technology R&D Programs: A Comparative Analysis,” June 30, 2009, <https://fas.org/sgp/crs/misc/RL34645.pdf>.
15. Government Accountability Office, “Nuclear Waste: Opportunities Exist to Reduce Risks and Costs by Evaluating Different Waste Treatment Approaches at Hanford,” May 2017.
16. Id., 1.
17. US Department of Energy FY 2020 Congressional Budget Request, p. 9, <https://www.energy.gov/sites/prod/files/2019/04/f62/doe-fy2020-budget-volume-1.pdf>.
18. Id., 591.
19. Blue Ribbon Commission on America’s Nuclear Future (2012), 18.
20. See, for example, the NRC’s website on dry cask storage: <https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/dry-cask-storage.html>.
21. Congressional Research Service, “Nuclear Energy: Overview of Congressional Issues,” updated July 16, 2020.
22. US Nuclear Regulatory Commission, “Power Reactors,” <https://www.nrc.gov/reactors/power.html>.
23. US Nuclear Regulatory Commission, “Operating Reactors,” <https://www.nrc.gov/reactors/operating.html>.
24. Oak Ridge National Laboratory, “History of the High Flux Isotope Reactor,” <https://neutrons.ornl.gov/hfir-history>.
25. Most fission-based medical isotopes used in the United States are imported, so the country of origin has the responsibility to deal with the remaining radionuclides resulting from their production.
26. Dominique Delbeke and George Segall, “Status of and Trends in Nuclear Medicine in the United States,” *Journal of Nuclear Medicine* 52, supp. 2: 24S–28S, doi: 10.2967/jnumed.110.085688.



27. National Academies, “Opportunities and Approaches for Supply of Molybdenum-99 and Associated Medical Isotopes to Global Markets,” Proceedings of a Symposium, 2018, <https://www.nap.edu/catalog/24909/opportunities-and-approaches-for-supplying-molybdenum-99-and-associated-medical-isotopes-to-global-markets>.
28. Blue Ribbon Commission on America’s Nuclear Future (2012), 16.
29. National Research Council, *Disposition of High-Level Waste and Spent Nuclear Fuel: The Continuing Societal and Technical Challenges* (Washington, DC: The National Academies Press, 2001). From page 10: “In the 1950s and 1960s, it was widely assumed that essentially all spent nuclear fuel (SNF) would be reprocessed to recover uranium and plutonium. Today, the United States and some other nations have established national policies not to reprocess SNF, but rather to dispose of it directly.”
30. See, for example, Samuel Walker’s “The Road to Yucca Mountain” for a history of AEC HLW disposal efforts.
31. Interagency Review Group, *Report to the President by the Interagency Review Group on Nuclear Waste Management*, TID-29442 (Washington, DC: US Department of Energy, 1979).
32. For example, the joint report accompanying one nuclear waste bill around the same time—S.1662, which was introduced as the National Nuclear Waste Policy Act of 1981—stated: “In addition, the Committee amendment provides a detailed schedule of milestones for the construction of at least one additional repository, and imposes maximum capacity limits on the first repository until a second repository is in operation. Repositories are required to be located on a regional basis to minimize the cost and impact of transportation. These provisions are intended to guarantee that no single State or region of the country will bear the full burden of civilian nuclear waste disposal.”
33. As a technical note, some of the locations under consideration for the first repository site were in Louisiana and Mississippi, neither of which are particularly “West.” However, as other quotes in this report and other publications show, the characterization of the first repository as being “western” and the second as “eastern” was widely used, including by the authors of the NWPA, such as Representative Mo Udall.
34. Richard Stewart, “Solving the U.S. Nuclear Waste Dilemma,” *Environmental Law Reporter* 40, no. 8 (August 2010), <https://elr.info/sites/default/files/articles/40.10783.pdf> (hereafter referred to as “Stewart, 2010”).
35. See the BRC staff draft to the members of the Ad Hoc Subcommittee on Commingling of Defense and Commercial Waste regarding “Background Paper on Commingling of Defense and Commercial Waste.”
36. Thomas O’Toole, “Clinch River Site Urged for Storing Atomic Waste,” *Washington Post*, April 26, 1985. https://www.washingtonpost.com/archive/politics/1985/04/26/clinch-river-site-urged-for-storing-atomic-waste/fd498bd7-a8e6-43e2-998d-5dd54d26ce5a/?utm_term=.07450d56ee70.



37. Government Accountability Office, “Monitored Retrievable Storage of Spent Nuclear Fuel,” May 1986, <https://www.gao.gov/assets/90/87143.pdf>.
38. Congressional Research Service, “Nuclear Waste Disposal: Alternatives to Yucca Mountain,” February 6, 2009, 20.
39. *Washington Post*, “Nuclear Waste Won’t Be Dumped in East,” May 29, 1986.
40. Robert D. Hershey Jr., Special to the *New York Times*, “U.S. Suspends Plan for Nuclear Dump in East or Midwest,” May 29, 1986, <https://www.nytimes.com/1986/05/29/us/us-suspends-plan-for-nuclear-dump-in-east-or-midwest.html>.
41. US House of Representatives Committee on the Interior and Insular Affairs, Subcommittee on Energy and the Environment, Implementation of the Nuclear Waste Policy Act (Site Selection Program), July 31, 1986. Relevant excerpts: Representative Mo Udall (D-AZ), “By deferring the next round, the administration unilaterally repudiated the major element, an essential compromise between eastern and western interests that allowed the waste bill to become law. But evidently the pressure for action on a Senate seat overwhelmed the administration’s ability to think clearly and to protect the act...Nobody is going to win this kind of political game playing. Everybody loses”; Representative John McCain (R-AZ), “We did need a national law, and that law said there would be a second round and it is an integral part of that legislation. I don’t believe that legislation would have been passed if there had been the perception or belief that somehow that aspect of the law would be abrogated by this or any other administration”; Representative Barbara Vucanovich (R-NV), “Nevada, unfortunately, has been given a clear message that it may well have to accept all of the Nation’s high level waste for the indefinite future, and that it should be prepared to accept it with no assurances that DOE must prove that Nevada is the safest site in the Nation...Under these circumstances, Nevada has no confidence in the present volume cap or that the cap won’t just be lifted when it becomes politically convenient to do so”; Representative Beau Boulter (R-TX), “The problem we are facing is that they don’t believe that the process has been carried out fairly in accordance with the law. They just simply mistrust the whole process, and I share that feeling very strongly, Mr. Chairman... It really is, because we have had the indefinite postponement of the second site, which destroys the concept of region balance.”
42. September 18, 1987, House Interior Committee hearing on H.R.2888 and H.R.2967.
43. Site characterization activities are undertaken to establish geologic conditions, including making use of borings, surface excavations, excavations of exploratory shafts, and other activities to evaluate the suitability of a candidate site for the location of a repository. So, for example, exploratory shafts to do site characterization work had not been sunk at the three sites identified as candidates for the first repository previous to Congress amending the NWPA in 1987 to select Yucca Mountain.
44. Stewart, 2010: “Senator Bennett Johnston of Louisiana, the powerful Chairman of the Senate Energy Committee, was concerned that escalating costs and intensified opposition from potential host states would scuttle the entire program unless Congress moved swiftly



to designate the repository site.”

45. GAO, “Nuclear Waste: Information on Cost Growth in Site Characterization Cost Estimates,” 1987, 1: “DOE’s earliest estimates of site characterization costs, made in 1981, were from \$60 million to \$80 million per site, or from \$180 million to \$240 million for three sites. Since then, DOE’s cost estimates for characterizing three sites have increased dramatically, to \$2.2 billion in 1984, and to \$4.8 billion in its latest preliminary estimates.”
46. The genesis for this nickname appears to come from Representative James Bilbray from Nevada. Bilbray remembers being told by another member of the House, “I hope you understand what is going on here. There are three sites under review—Texas, Nevada and Washington. And the speaker [of the House, Jim Wright] is a Texan and the majority leader [Tom Foley] is a Washingtonian...It is not going to Washington. And it is not going to Texas.” Bilbray told a story of leaving a meeting with Majority Leader Tom Foley and Speaker Jim Wright where he was told that Yucca Mountain was it, and telling a friend that “Nevada had just been screwed.” See page 33 of the “Report and Recommendations of the Nevada Commission on Nuclear Projects,” <http://www.state.nv.us/nucwaste/pdf/2019.11.04%20Draft%20Commission.pdf>.
47. Representative Morris Udall, House Debate, Congressional Record, vol. 133, pt. 26 (December 21, 1987), 37068.
48. Congressional Record—Senate, October 31, 1995, p. S16388. “I then introduced legislation to call on the Department of Energy to pick one of the three sites and characterize it to save \$2.4 billion. My version did not pass because when it got to the conference committee with the House they said go ahead and name Yucca Mountain—do it politically, not scientifically. They had the votes...I must say in all fairness Nevada probably would have been scientifically picked at least. That was the indication I got at the time. But I think Nevada had a proper cause to complain because it was, in fact, a political decision rather than a scientific decision, although that might well have been the place where it would have been picked.”
49. DOE, “A Multiattribute Utility Analysis of Sites Nominated for Characterization for the First Radioactive-Waste Repository—a Decision-Aiding Methodology,” May 1986, <https://www.osti.gov/servlets/purl/5362489>.
50. See chapter 2 of “*Uncertainty Underground*” (2006), edited by Allison MacFarlane and Rodney Ewing.
51. Congressional Research Service, “Civilian Nuclear Waste Disposal,” October 7, 2008, 3–5.
52. *Id.*, 6–7.
53. Nuclear Energy Institute v. Environmental Protection Agency, US Court of Appeals for the District of Columbia Circuit, No. 01-1258, July 9, 2004.
54. Congressional Research Service, “EPA’s Final Health and Safety Standard for Yucca Mountain,” October 6, 2008.



55. The Blue Ribbon Commission on America's Nuclear Future released its report to the secretary of energy in January 2012: https://www.energy.gov/sites/prod/files/2013/04/f0/brc_finalreport_jan2012.pdf.
56. GAO, "Yucca Mountain: Information on Alternative Uses of the Site and Related Challenges," September 2011, 24.
57. Congressional Research Service, "Civilian Nuclear Waste Disposal," September 6, 2018, 6.
58. Id., 8–9.
59. US Nuclear Regulatory Commission, "Safety Evaluation Report Related to Disposal of High-Level Radioactive Wastes in a Geologic Repository at Yucca Mountain, Nevada: Proposed Conditions on the Construction Authorization and Probably Subjects of License Specifications (NUREG-1949, Volume 5)," <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1949/v5/>.
60. Archived whitehouse.gov website from President Obama's time in office, "Presidential Memorandum—Disposal of Defense High-Level Radioactive Waste in a Separate Repository," <https://obamawhitehouse.archives.gov/the-press-office/2015/03/24/presidential-memorandum-disposal-defense-high-level-radioactive-waste-se>.
61. US Department of Energy, "Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste," January 12, 2017.
62. DOE, "Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program, Fiscal Year 2007," DOE/RW-0591, July 2008.
63. For more information on the 1995 agreement, see <https://www.deq.idaho.gov/inl-oversight/oversight-agreements/1995-settlement-agreement/>; the agreement between the state of Idaho, the US Navy, and the US Department of Energy could be looked at as an example of written consent for consolidated interim storage of SNF.
64. The US Judgment Fund receives a permanent, indefinite appropriation from the US Treasury and exists to pay court judgments and compromise settlements of lawsuits against the federal government: <https://www.fiscal.treasury.gov/judgment-fund/faqs.html>.
65. Congressional Research Service, "Civilian Nuclear Waste Disposal," September 6, 2018.
66. US Nuclear Regulatory Commission, "Backgrounder on Decommissioning Nuclear Power Plants," <https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/decommissioning.html>.
67. National Academy of Sciences, National Research Council, *The Disposal of Radioactive Wastes on Land: Report* (Washington, DC: The National Academies Press, 1957), <https://doi.org/10.17226/18527>. From page 3: "The Committee is convinced that radioactive waste can be disposed of safely in a variety of ways and at a large number of sites in the United States."



68. National Research Council, *Disposition of High-Level Waste and Spent Nuclear Fuel: The Continuing Societal and Technical Challenges* (Washington, DC: The National Academies Press, 2001), <https://doi.org/10.17226/10119>. From page 1: “There has been, for decades, a worldwide consensus in the nuclear technical community for disposal through geological isolation of high-level waste (HLW), including spent nuclear fuel (SNF).”
69. This list and much of this subchapter is informed by M. J. Apted and J. Ahn, “Repository 101: Multiple-Barrier Geological Repository Design and Isolation Strategies for Safe Disposal of Radioactive Materials,” in *Geological Repository Systems for Safe Disposal of Spent Nuclear Fuels and Radioactive Waste*, eds. M. Apted and J. Ahn (Duxford, UK: Woodhead Publishing, 2017), 3–26.
70. In 2020, all of the operating power reactors in the United States are light water reactors, and SNF from light water reactors is by far the largest part of the US nuclear waste inventory in terms of cumulative radioactivity.
71. These elements also form barriers to human intrusion of a repository, which is a separate but important concern.
72. The EPA estimates that on average a US citizen receives 620 millirem of radiation dosage each year, where approximately half of that dosage comes from natural sources (e.g., radon and thoron, cosmic radiation, radioactive elements in the human body, radiation from foods consumed, etc.) and man-made sources, such as medical procedures (e.g., X-rays and hospital diagnostics and treatment using nuclear medicine). See <https://www.epa.gov/radiation/radiation-sources-and-doses>.
73. The primary generators of heat from SNF after the first decade following removal from a reactor are initially two fission products—cesium-137 and strontium-90—both of which have half-lives of around 30 years. Depending upon the SNF composition at the time it is removed from reactor operation, perhaps 40 to 60 years later americium-241 (with a half-life of 432 years) eventually overtakes these two isotopes as the leading contributor to heat generation from SNF. It is unlikely that a waste management system would see substantial advantages in cooling SNF for a period of time approaching americium-241’s half-life given the implied hundreds of years of storage costs. See the appendix to chapter 5 of MIT’s 2011 report “*The Future of the Nuclear Fuel Cycle*.”
74. US Department of Energy, “Geologic Disposal Safety Case,” <https://wipp.energy.gov/geologic-disposal-safety-case.asp>.
75. See the appendix to chapter 5 in MIT’s 2011 report “*The Future of the Nuclear Fuel Cycle*.”
76. RCRA gives EPA the authority to control hazardous waste from cradle to grave. For more information, see EPA’s website: <https://www.epa.gov/laws-regulations/summary-resource-conservation-and-recovery-act>.
77. R. Stewart and J. Stewart, “Fuel Cycle to Nowhere,” 2011, 164: “The federal government’s maneuvering to include SNF in plans for WIPP soured many in New Mexico on the WIPP project, inspiring the state legislature to come very close to passing a constitution



amendment that would ban storage of any radioactive waste brought into the state. New Mexico had no nuclear power plants, and the state was strongly opposed to hosting other states' nuclear power wastes. Because of its role in the development of the atomic bomb and the ongoing presence of government nuclear facilities, including Sandia, in New Mexico, the state was less averse to hosting defense wastes."

78. Stewart and Stewart, 2011. Page 173 discusses the discovery of an underground brine pocket and the aftermath: "After discovery of the brine pocket, DOE decided, upon EEG's recommendation, to build the repository in a location extending south from the central shaft instead of north as originally planned."
79. Stewart and Stewart, 2011, 171.
80. All of the relevant documents and agreements discussed here are, as of May 2020, found at the WIPP website: https://wipp.energy.gov/Library/Information_Repository_A/Class_3_Permit_Modifications/TID%20References/U.S.%20DOE.%201981a..pdf.
81. First, a truck caught fire while underground in the repository; workers were evacuated, and a portion of WIPP was shut down. Six workers were treated for smoke inhalation. A second, entirely separate, accident was noticed when an underground air monitor within the WIPP tunnels detected airborne radioactivity. The source was traced to a compromised drum of TRU waste that had been emplaced in WIPP in late 2013. The accident was caused when a drum containing the TRU waste ruptured after its contents underwent an energetic chemical reaction. EPA ultimately concluded that the radiation releases did not pose a public health concern. The New Mexico State University's Carlsbad Environmental Monitoring & Research Center similarly found that no negative radiation-related health effects among local workers or the public should be expected. The state of New Mexico and DOE reached a settlement of \$74 million related to the state's claims against the DOE and its contractors regarding these incidents. Recovery from the accidents added large costs to the WIPP project, stopped disposal operations at the facility for years, and resulted in more limited operations when it reopened.
82. See, for example, the review of eight countries' nuclear waste programs compiled by Sweden in 2019: <https://www.karnavfallsradet.se/en/report-20191-overview-of-eight-countries-status-april-2019>.
83. For example, independent, nongovernmental groups in Sweden, such as MKG, have raised concerns over possible early corrosion of the copper canisters involved with the Swedish approach to disposal (<http://www.mkg.se/en/mkg-and-member-organisations-send-a-statement-to-the-government-on-skbs-complementary-copper>). As of October 2020, the Swedish government is still evaluating additional information on the copper canisters provided by SKB.
84. World Nuclear Association, "Nuclear Power in Finland," <https://www.world-nuclear.org/information-library/country-profiles/countries-a-f/finland.aspx>.
85. World Nuclear News, "Posiva Plugs Repository Demonstration Tunnel," May 9, 2019, <http://>



- world-nuclear-news.org/Articles/Posiva-plugs-repository-demonstration-tunnel.
86. The Finnish company Posiva has posted a video explaining the operation of Onkalo: https://www.youtube.com/watch?v=A9vWhoT_45s.
 87. World Nuclear Association, "Nuclear Power in Sweden," updated March 2020, <http://www.world-nuclear.org/information-library/country-profiles/countries-o-s/sweden.aspx>.
 88. SKB, "Our Task," <https://www.skb.com/about-skb/our-task/>.
 89. MKG, a Swedish nongovernmental environmental organization established to work on nuclear waste issues, published an English translation of the court's opinion at [http://www.mkg.se/uploads/Summary_opinion_Swedish_Environmental_Court_regarding_proposed_final_repository_spent_nuclear_fuel_Forsmark_Jan_23_2018_\(unofficial_translation_MKG\).pdf](http://www.mkg.se/uploads/Summary_opinion_Swedish_Environmental_Court_regarding_proposed_final_repository_spent_nuclear_fuel_Forsmark_Jan_23_2018_(unofficial_translation_MKG).pdf).
 90. World Nuclear Association, "Nuclear Power in Canada," <https://www.world-nuclear.org/information-library/country-profiles/countries-a-f/canada-nuclear-power.aspx>.
 91. Nuclear Waste Management Organization, "Who We Are," <https://www.nwmo.ca/en/ABOUT-US/Who-We-Are>.
 92. See BRC final report or transcript of BRC panel discussion in Washington, DC, on October 20, 2011.
 93. DOE, "Assessment of Disposal Options for DOE-Managed High-Level Radioactive Waste and Spent Nuclear Fuel," October 2014, 25: "Available information indicates that a repository limited to DOE-managed HLW and SNF not of commercial origin could be more likely to gain public acceptance than a repository that includes commercial waste, all other factors being equal. In the case of WIPP, the restriction of the facility to transuranic waste of defense origin was an essential condition to the public and state acceptance of the repository (Downey 1985; Stewart and Stewart 2011). In contrast to a repository for commercial SNF, siting a repository for DOE-managed HLW and SNF may be viewed as a national responsibility whereby all states have a share in the benefits and responsibilities."
 94. The situation is different for navy SNF, which contains highly enriched uranium and thus involves nonproliferation and criticality considerations.
 95. P. V. Brady, B. W. Arnold, G. A. Freeze, P. N. Swift, S. J. Bauer, J. L. Kanney, R. P. Rechard, and J. S. Stein, *Deep Borehole Disposal of High-Level Radioactive Waste*, SAND2009-4401 (Albuquerque, NM: Sandia National Laboratories, 2009).
 96. US Nuclear Waste Technical Review Board, "Evaluation of Technical Issues Associated with the Development of a Separate Repository for US Department of Energy-Managed High-Level Radioactive Waste and Spent Nuclear Fuel," June 2015, 7: "In a mined geologic repository where DOE-managed and commercial HLW and SNF are commingled, the total radionuclide release from the repository would be dominated by the release from commercial SNF."
 97. DOE, 2014, 17.



98. BRC Staff Draft—Background Paper on Commingling of Defense and Commercial Waste. Transmitted to Members of the Ad Hoc Subcommittee on Commingling of Defense and Commercial Waste, November 17, 2011.
99. National Research Council committees in the past have recommended a staged (or phased), adaptive approaches to geologic disposal programs. For example, a 2001 report, *Disposition of High-Level Waste and Spent Nuclear Fuel*, observed (page 5): “For both scientific and societal reasons, national programs should proceed in a phased or stepwise manner, support by dialogue and analysis.” A 2003 report, “*One Step at a Time: The Staged Development of Geologic Repositories for High-Level Waste*”, states (page 2) that adaptive staging “emphasizes continuous learning, both technical and societal, includes scientific and managerial re-evaluations and reaction to new knowledge, is responsive to stakeholder input, and is designed to continually improve the project while retaining the option of reversibility.” “Consent-based” is discussed in chapter 6, but at a minimum in the United States a project would likely need to include support from the local government without active opposition from the state government.
100. US Nuclear Regulatory Commission, “Materials Transportation,” <https://www.nrc.gov/materials/transportation.html>.
101. There is the possibility of heavy-haul truck transport with larger casks being moved on highways with low-speed overweight trucks.
102. See page 58 of the 2006 National Academies report “*Going the Distance*” (NAS 2006).
103. The tests are defined in 10 CFR Part 71.73.
104. Centers for Disease Control and Prevention. “Facts about Chlorine,” <https://emergency.cdc.gov/agent/chlorine/basics/facts.asp>.
105. US Energy Information Administration, “Hydrocarbon Gas Liquids Explained,” https://www.eia.gov/energyexplained/index.php?page=hgls_uses.
106. Energy Information Administration, “New Methanol Plants Expected to Increase Industrial Natural Gas Use through 2020,” February 21, 2019, <https://www.eia.gov/todayinenergy/detail.php?id=38412>.
107. Transportation Research Board and National Research Council, *Going the Distance? The Safe Transport of Spent Nuclear Fuel and High-Level Radioactive Waste in the United States* (2006), pp. 138 and 149–61.
108. See page 54 of the 2019 Nevada Commission of the Report and Recommendations of the Nevada Commission on Nuclear Projects: “At the direction of the Nevada Legislature, the Agency in 1988 prepared a comprehensive report on transportation issues, known as the ACR 8 Report. Growing out of the ACR 8 Report, the Agency developed ten major safety and security recommendations: 1 Ship oldest SNF first (to reduce overall radiological hazards from fission products)...” This recommendation is also found in the 2006 National Academies’ “*Going the Distance*” report and BRC 2012.



109. ORNL, “A Historical Review of the Safe Transport of Spent Nuclear Fuel,” 2016, v. As page 35 discusses, there have been incidents where transportation casks have been, for example, placed in a spent fuel pool and as a result contaminated with cesium-137, but those types of contamination incidents were not the result of any kind of failure of the transportation cask.
110. US Nuclear Regulatory Commission, “Transportation of Spent Nuclear Fuel.” According to the NRC, thousands of shipments of commercial SNF have been transported throughout the United States “without causing any radiological releases to the environment or harm to the public” over the past 40 years, <https://www.nrc.gov/waste/spent-fuel-transp.html>.
111. ORNL, 2016, 41. R. Pope, X. Bernard-Bruls, and M. T. M. Brittinger, “A World-Wide Assessment of the Transport of Irradiated Nuclear Fuel and High Level Waste,” *Proceedings of the International Symposium on Packaging and Transportation of Radioactive Materials*, Institute of Nuclear Materials Management, Chicago, IL, USA (2001).
112. ORNL, 2016, 41.
113. Western Governors’ Association, “WIPP Transportation Fact Sheet,” http://westgov.org/images/editor/WIPP_Fact_Sheet_September_2016.pdf.
114. US Department of Energy, “Shipment & Disposal Information,” <https://www.wipp.energy.gov/shipment-information.asp>.”
115. US Navy and National Nuclear Security Administration, “United States Naval Nuclear Propulsion Program: Operating Navan Nuclear Propulsion Plants and Shipping (Rail) Naval Spent Fuel Safety for Over 60 Years,” September 2017, https://www.energy.gov/sites/prod/files/migrated/nnsa/2018/01/f46/united_states_naval_nuclear_propulsion_program_operating_naval_nuclear_propulsion_plants_and_shipping_rail_naval_spent_fuel_safely_for_over_sixty_years.pdf.
116. The state of Idaho hosts these additional agreements at <https://www.deq.idaho.gov/inl-oversight/oversight-agreements/>.
117. See page 9 of the Leadership in Nuclear Energy Commission full report from January 2013. Available on the Idaho government’s website: <https://line.idaho.gov/wp-content/uploads/sites/12/2016/07/LINE-Full-Report-1.pdf>.
118. Adrian Hedden, “Department of Energy: Half of Nuclear Waste Shipments to WIPP Come from Idaho National Lab,” *Carlsbad Current-Argus*, November 18, 2019, <https://www.currentargus.com/story/news/local/2019/11/18/doe-more-than-half-wipp-shipments-come-idaho-national-lab/4205541002/>.
119. See page 56 of the “*Report and Recommendations of the Nevada Commission on Nuclear Projects*,” November 2019, <http://www.state.nv.us/nucwaste/pdf/2019.11.04%20Draft%20Commission.pdf>.
120. BRC, 2012, 150.



121. Of note, the 1982 NWPA called for the program to submit a budget to the Office of Management and Budget on a triennial basis, not an annual one. This also recognized the special long-duration nature of the waste disposal program and the need for sustained, consistent funding.
122. See the BRC-commissioned paper by Joseph S. Hezir, “Budget and Financial Management Improvements to the Nuclear Waste Fund,” May 2011, 10.
123. Ibid.
124. DOE, *Nuclear Waste Fund Annual Financial Report Summary FY2019 and Cumulative*, <https://www.energy.gov/sites/prod/files/2019/12/f69/FY19%20-%20NWF%20Annual%20Financial%20Report%20Summary.pdf>.
125. The facility in Utah was licensed but ultimately terminated on account of opposition from within the state. More information on the Texas and New Mexico projects is available at <https://www.nrc.gov/waste/spent-fuel-storage/cis.html>.
126. The committee report for HR.3053 in the 115th Congress explains that deleting section 135(h) “makes a conforming change to align with the authority under Title I of the legislation, which provides DOE authority to enter into an MRS agreement to store SNF with a non-Federal entity.”
127. See pages xii–xiii of the 2012 BRC report.
128. DOE, “The Report to the President and the Congress by the Secretary of Energy on the Need for a Second Repository,” December 2008.
129. Testimony of Kelly Horn, Co-Chairman of the Midwestern Radioactive Materials Transportation Committee, to the US House Energy and Commerce Committee, Subcommittee on Environment and the Economy, Thursday, October 1, 2015.
130. The idea appears in a 1977 book by Mason Willrich and Richard K. Lester, *“Radioactive Waste: Management and Regulation.”*
131. Office of Technology Assessment, “Managing Commercial High-Level Radioactive Waste: Summary Report,” OTA-O-172, April 1982. OTA found that “the establishment of a single-purpose waste management organization, independent of other Federal nuclear programs, is needed to avoid the competition for manpower and policy-level attention that has adversely affected the waste management program in the past, to ensure that the staff’s primary incentive is the safe and timely accomplishment of the goals of the waste management policy, and to insulate the program from future reorganizations of Federal energy programs.”
132. Advisory Panel on Alternative Means for Financing and Managing Radioactive Waste Management Facilities, “Managing Nuclear Waste—a Better Idea,” 1984.
133. MIT, “The Future of the Nuclear Fuel Cycle,” 2011; BRC, 2012; Bipartisan Policy Center, “Moving Forward with Consent-Based Siting for Nuclear Waste Facilities:



Recommendations of the BPC Nuclear Waste Council,” September 2016; Stanford University and George Washington University, “Reset of America’s Nuclear Waste Management: Strategy and Policy,” October 15, 2018.

134. See page 185 of Luther Carter’s “Nuclear Imperatives and Public Trust.” The author describes a conversation with former deputy secretary of energy John O’Leary regarding concessions to states on nuclear waste wherein O’Leary told him that the concessions “amounted simply to a recognition that a repository cannot be built over determined host-state opposition” and quotes O’Leary as saying, “When you think of all the things a determined state can do, it’s no contest” citing the regulatory authority a state has with respect to its lands, highways, employment codes, and the like.
135. <https://www.energy.senate.gov/public/index.cfm/2019/4/bipartisan-senate-coalition-reintroduces>.
136. US Department of Energy, “Alternative Means of Financing and Managing the Civilian Radioactive Waste Management Program,” DOE/RW-0546, August 2001. See figure 3 for a summary of past efforts. Page 13: “Several legislative proposals were introduced to restructure the NWF receipts as an offsetting collection user fee, consistent with the structure of most new Government user fees enacted since the [Budget Enforcement Act].”
137. Ibid., figure 4.
138. Statement of Under Secretary of Energy Robert H. Card, before the Sub-committee on Energy and Air Quality, US House Committee on Energy and Commerce, March 25, 2004.
139. Hezir, 2011, 22–26.
140. There are, of course, other ideas. As the BRC-commissioned paper by Joseph Hezir discusses, there are other legislative options including designating the NWF as a trust fund in law or taking the fund “off-budget.”
141. This point seems to have been made in a BRC staff draft memo on comingling defense and commercial waste. As of August 2020, the paper is available at https://cybercemetery.unt.edu/archive/brc/20120620231824/http://brc.gov/sites/default/files/documents/defense_waste_policy_issue_paper_final.pdf.
142. Page 90 of the 2012 BRC report.
143. *Reset of America’s Nuclear Waste Management: Strategy and Policy*, Stanford University Center for International Security and Cooperation, George Washington University Elliot School of International Affairs. October 15, 2018, 9.
144. See pages 89–95 of the 2012 BRC report for greater discussion.
145. The recent Nevada Commission on Nuclear Projects report states that a 2017 Nevada state legislature vote on Assembly Joint Resolution 10, expressing opposition to a repository for SNF and HLW at Yucca Mountain passed by a vote of 32 yeas, 6 nays, and 4 excused: <http://www.state.nv.us/nucwaste/pdf/2019.11.04%20Draft%20Commission.pdf>.



146. For example, on page 424 of Luther Carter’s 1987 book *“Nuclear Imperatives and Public Trust,”* he discusses how many Nevadans cited “lack of fairness” when discussing Yucca Mountain and the feeling that any time a site is needed for an activity no other state would tolerate, a place in Nevada will be chosen. After the DOE announced that the search for a second site would be suspended and Yucca Mountain was one of three finalists to be the first and, seemingly, only repository, Carter quotes the *Las Vegas Review Journal* as saying: “If those underground atomic shots that ripple the upper floors of high-rise buildings in Las Vegas don’t scare the tourists, then, sure as heck, a waste site isn’t likely to keep the folks away...What is at issue is the lack of fairness to Nevada, the disregard in Washington for the wishes of the people and the tendency of the technocrats and political forces in Washington to exploit Nevada’s relative lack of national political power.”
147. The legislation would prohibit the secretary of energy from making an expenditure from the NWF for costs associated with transportation, treating, or packaging SNF or HLW to be disposed of in a repository or stored at an MRS site unless written, legally binding agreements were in place with the governor of the state hosting the site, associated groups of local governments, and affected Indian tribes. Any expenditures from the NWF for costs associated with designing, constructing, and operating geologic repositories and MRS sites would need the same forms of consent. The legislation does not prohibit any funds from the NWF from being used at early milestones of site characterization or even the licensing of a geologic repository in the absence of these written agreements. Instead, the consent is applied just before repository construction. This approach would give a state the maximum amount of knowledge about a repository site before consenting to construction of a facility for commercial SNF disposal.
148. A discussion of these debates, previous to the NWPA of 1982, can be found on pages 177–84 in the Office of Technology Assessment report *“Managing the Nation’s Commercial High-Level Radioactive Waste,”* OTA-O-171, March 1985.
149. Testimony of Commissioner Dan Schinhofen, Vice-Chairman of the Nye County, Nevada Board of County Commissioners to the House Energy and Commerce Committee, July 7, 2016, <https://docs.house.gov/meetings/IF/IF18/20160707/105164/HHRG-114-IF18-Wstate-SchinhofenD-20160707.pdf>.
150. Nye County hosts this letter at <http://www.nyecounty.net/CivicAlerts.aspx?AID=824&ARC=1487>.
151. Yvonne Gonzalez, “Yucca Mountain Panel Shows Divide between State, Rural Counties,” *Las Vegas Sun*, September 7, 2017, <https://lasvegassun.com/news/2017/sep/07/yucca-mountain-panel-shows-divide-between-state-ru/>.
152. US Congress Office of Technology Assessment, *Managing the Nation’s Commercial High-Level Radioactive Waste*, OTA-O-171, March 1985, appendix A.





From: [REDACTED]
Sent: Monday, March 21, 2022 7:47 AM
To: ^PNNL CBS Comments
CC: [REDACTED]
Subject: FW: comments
Attachments: Const base siting signed.pdf

From: [REDACTED]
Sent: Monday, March 21, 2022 10:22 AM
To: [REDACTED]; [REDACTED]
Subject: [REDACTED] RE: comments

Enclosed, please find the SBT Consent Based Siting signed
document. Thank you

[REDACTED]

[REDACTED]

[REDACTED]

The SHOSHONE-BANNOCK TRIBES

FORT HALL INDIAN RESERVATION
PHONE (208) 478-3700
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FORT HALL BUSINESS COUNCIL
P.O. BOX 306
FORT HALL, IDAHO 83203

March 11, 2022

Jennifer Granholm, Secretary
U.S. Department of Energy
Washington, D.C. 20585

Re: Shoshone-Bannock Tribes' Government-to-Government Comments on Consent-Based Siting

Dear Madam Secretary:

The Shoshone-Bannock Tribes (SBT) are located on the Fort Hall Reservation in Fort Hall, Idaho. Our ancestral homelands are described within the Fort Bridger Treaty dated July 3, 1868, and fall within multiple States including Idaho, Oregon, Nevada, Utah, Wyoming, Montana, and portions of Canada. Cultural and historic ties to our extensive homelands are the basis for our long-standing relationship with the United States that involves multiple federal agencies including the U.S. Department of Energy (DOE). Due to our unique standing, the SBT signed an Agreement-in-Principle (AIP) with DOE in 1992 which outlines specific conditions for government-to-government interactions with our Tribal Government and involvement with our Tribal Office of Emergency Management and Tribal Department of Energy which are ongoing and remain in full force and effect.

It is our contention the Department's efforts to revisit Consent-Based Siting (CBS) are necessary and must include several key elements to create a stable foundation for moving a robust process forward in a systematic and ethical manner.

In response, the SBT has several points which must be considered throughout the deliberative and integrative process. Although Shoshone Bannock Tribes is opposed to the radioactive past that exists from decades of testing, processing, storing, and transporting radioactive materials throughout our traditional homelands. Equally, we are troubled that no solutions have yet emerged other than political notoriety coupled with mixed messaging that has given no consideration for addressing the problem of protecting future generations. From our view, the burden of indecisiveness is limited to placing the emphasis on existing legacy waste without consideration to Spent Nuclear Fuel and High-Level Radioactive Waste that continue to be generated without a defined path. As such, I am sharing the following perspectives to convey the seriousness of this important issue that remains yet unsettled. Shoshone Bannock Tribes would not consider perpetual siting. There needs to be more effort in research and development to

reuse, eliminate any and all radio-active fuel or materials, but not limited to low-level radioactive waste.

- Tribal Sovereignty remains paramount in the development of any policies or approaches. Each Federally Recognized Tribe must be viewed as an independent government entity that operates under unique laws and regulations. Attempts to move forward must be done in a manner consistent with existing Treaties and Executive Orders between the United States and Tribal Governments including the Fort Laramie Treaty of 1868 or similar documents which are acknowledged as the Supreme Law of the Land.

DOE must continue to implement standards consistent with the Presidential Memorandum on *Tribal Consultation and Strengthening Nation-to-Nation Relationships*, DOE Order 144.1 *American Indian Tribal Government Interaction Policy*, and other federal mandates which require good-faith Government-to-Government Tribal interactions including as identified in the Nuclear Waste Policy Act (as amended) which details specific parameters for Tribal involvement and the storage of SNF and HLRW.

- When establishing policies or initiating tribal interactions, DOE must confirm cultural affiliation when discussing Consent Base Siting to ensure appropriate Tribal Governments with cultural and historic ties are involved throughout related discussions, reviews, approvals, and implementation processes.
- Further, Consent Base Siting considerations must reaffirm and effectively integrate government-to-government interactions before, during, and after siting discussions, negotiations, approval, oversight, and removal considerations. Which will be done with the tribal council in Fort Hall, Idaho.
- When developing a process, the Department must first examine the parameters of the undertaking, followed by defining or achieving "*consent*" before establishing policies relating to storage sites, transportation corridors, emergency management considerations, funding allocations, and impacts placed upon Tribal Governments located within 100 miles of the nearest railhead as a baseline, not 50 miles from the closest Nuclear Power Plant as used by the Nuclear Regulatory Commission. Similarly, siting and transportation corridors on or near tribal lands, which includes hunting grounds, ceremonial grounds, gathering sites, and burial grounds, MUST be included early on in the planning and notification process.
- DOE is considering a variety of approaches for achieving "*consent*" including proposed "private" Consolidated Interim Storage initiatives and companies for which consensus is not required. While striving to understand "*consent*" it is important to note from a Tribal view that private initiatives are not bound by provisions of the Nuclear Waste Policy Act, as amended including the provisions of Section 180 (c) which provide for Tribal funding, training, and technical assistance.

It is our contention “*consent*” demonstrates agreement derived from an interactive process. Without an agreed-upon definition or understanding of long-term management strategies, Tribal governments will not be fully integrated into good-faith efforts nor have the ability to reach consensus through meaningful government-to-government consultation needed to evaluate corresponding benefits and/or implications which will never be considered perpetual.

- Systematic analyses are needed for transporting and storing Spent Nuclear Fuel and High-Level Radio Active Waste. DOE must understand the complexities and challenges placed upon Tribal Governments with limited resources and technical assistance to engage the communities they represent. Tribal Governments are responsible at many levels and often rely upon emergency management or public service programs to protect the health and safety of our communities, including but not limited to addressing impacts to resources, the environment, tribal enterprises, and culturally sensitive areas.
- In order for Tribal communities to fully understand *consent*, used in potential siting considerations, DOE must first develop clear, concise, and consistent messaging to alleviate misunderstandings or disagreements. To move beyond the challenges of previous siting efforts, DOE must stipulate its intentions early on and demonstrate federal intentions, ownership of any storage facility under its authority with the affirmation the facility will be built and operated by qualified personnel at all levels in compliance with the Nuclear Waste Policy Act (as amended) and other prevailing regulations authorized by Congress.
- In order to be effective, Consent Base Siting must promote open dialogue and integrate the provisions of numerous federal regulations including but not limited to Presidential Memoranda on government-to-government relationships; American Indian Religious Freedom Act; Executive Order 13007 *Access to Sacred Sites*, Native American Graves Protection and Repatriation Act, National Park Service Bulletin 38 *Guidelines for Documenting and Evaluating Traditional Cultural Properties*; National Historic Preservation Act, National Environmental Policy Act including standards imposed by Environmental Protection Agency’s Clean Air and Water Act(s) Standards.
- Based on past experience, the SBT has observed numerous challenges with previous siting efforts including those of neighboring Tribes such as the Skull Valley Goshute Tribe’s attempt to host an interim storage facility on Tribal trust lands. Unfortunately, the initiative was overridden by the State of Utah, thus raising questions about DOE and other federal regulators’ commitment to fulfilling their Trust Responsibility and permitting State Governments to intervene and disregard Tribal sovereignty and the unique relationship that exists between Federally Recognized Tribes and the United States. Tribal status surpasses any relationship between the United States and State Governments. As such, it is important to note States do not speak for the Tribes, and Tribes do not speak for the States!

- The SBT believes “*consent*” must apply equal consideration to Tribal jurisdictional authority and impacts derived from transporting and/or storing Spent Nuclear Fuel and High-Level Radioactive Waste on or near our traditional homelands. While Executive Order 12898 *Environmental Justice* may be an important tool for minority and low-income communities including Tribal Governments when addressing impacts, certain conditions or thresholds must be met to demonstrate disproportionate impacts to a calculus of the population. The disproportionate impacts while actual may be useful to some segments of the population but not necessarily in the best interest of Federally Recognized Tribes. Despite the intent of Order 12898, the SBT believes Trust Responsibility is the cornerstone for a meaningful government-to-government consultation and exercising tribal administrative and jurisdictional authority.
- Previous efforts by DOE’s Office of Civilian Radioactive Waste Management (OCRWM) focused on supporting a geologic repository at Yucca Mountain, Nevada. The project ultimately failed due to the absence of “*consent*,” political pressure, and without having systematic incentives for Tribes to fully participate in the decision-making process as “they” deemed appropriate. Unfortunately, DOE chose to approach States with opportunities to negotiate and accept or reject the storage site. Conversely, Tribal Governments were not given the same consideration despite their unique status with the United States and were left unable to exercise their rights or rely upon legislatively mandated Trust Responsibility to properly engage or have direct input for protecting their original homelands.
- Examining past efforts, and reflecting on progressive approaches, the *Blue-Ribbon Commission on America’s Nuclear Future, The Administration’s Strategy for Management and Disposal of Used Nuclear Fuel and High-Level Waste*; Consent-Based Siting strategies identified multiple considerations. Once again, no Tribal representation was considered in the deliberations that may have yielded additional information. Unless the strategies have been identified to keep tribes out of the process. The question then would be why?


Next, it was recommended an interim storage facility or geologic repository must be realigned to fall under the authority of a new federal organization reporting directly to the Secretary of Energy. This approach will promote efficiently managing and overseeing siting and storage operations without prejudice. Until such consideration, challenges will continue, and Tribal and public trust cannot be sustained.

- Through various iterations, the SBT continues to see no attempts to successfully identify realistic time limits or other parameters associated with interim storage or geologic disposal beyond being told: “SNF and HLRW can be safely stored and removed when future technology is developed to safely process or extract the waste from the storage site.” This unrealistic response does not build confidence nor promote a clear understanding of what communities should expect to achieve a *meeting of the minds*.

- In our view, Consent Base Siting requires qualified leadership, technical staff, and having built-in assurances to sustain political accountability and fulfill its responsibility so Tribal Governments and other interested parties are provided with the necessary tools, resources, and information to become actively involved in the decision-making, selection, and oversight processes. We support the appointment of qualified personnel such as Dr. Kathern Huff, Senior Advisor-Office of the Secretary for building capacity and initiating the Consent Base Siting discussion to strengthen government-to-government relationships with Federally Recognized Tribes. I am pleased to share that during Dr. Huff's short tenure, she immediately took action to meet with the SBT Tribal Government to engage in meaningful face-to-face dialogue. This approach is not only appropriate but expected by Tribal Governments and viewed as a positive step towards initiating good-faith efforts.
- Additionally, the SBT believes DOE must create additional opportunities for Tribal Governments to be involved in advisory oversight through specially created committees similar to Canada's Nuclear Waste Management Organization's model for integrating First Nation's Traditional Ecological Knowledge (TEK) based on the collective wisdom of tribal Government official and designated elders; as, who better knows the land than the Tribes who have been here for thousands of years! The SBT believes Tribally appointed representatives can shape discussions by identifying topics of interest. Additionally, the SBT believes TEK has the ability to address concerns from a unique perspective to further enhance understanding of complex views and their relation to CBS and operational initiatives.
- The SBT knows meaningful Tribal involvement starts by reaffirming the acknowledgment that Tribes are recognized for their unique status and not to be confused as mere "stakeholders" which typically include clubs, groups, or organizations, not Tribal Governments. Tribes retain inherent sovereign governmental rights referenced in Treaties, Executive Orders and promulgated under federal law with the ability to engage in discussions on a government-to-government basis.

In closing and beyond the comments I have stated herein, the SBT wishes to acknowledge the efforts and comments developed on Consent Base Siting by the Department Of Energy's chartered Nuclear Energy Tribal Working Group (NETWG) and the Tribal Radioactive Materials Transportation Committee (TRMTC). Both entities include designated SBT representatives who participate in their executive assignments and bring forward Tribal views throughout the deliberative process. We at Shoshone Bannock Tribes offer the Secretary of the Department of Energy an invitation to visit Shoshone Bannock Tribes.

Sincerely,



Devon Boyer, Chairman
Shoshone-Bannock Tribes

From: Vernon Brechin
Sent: Sunday, February 13, 2022 7:09 PM
To: Consent Based Siting
Subject: [EXTERNAL] Consent-Based Siting and Federal Interim Storage

Attention: Evaluation team

In the 1950s the U.S. Atomic Energy Commission (AEC), who's major functions were absorbed into the U.S. Department of Energy (DOE), promised to provide a final disposal facility for the nation's high level radioactive waste from weapons production, naval reactors and commercial nuclear power plants. The failure to achieve that promise is clear, sixty years later. Instead of accountability we now have work-arounds, such as interim storage plans. There still is no indication that the federal government will ever be required to remove the storage casks from the interim storage sites.

The DOE's Consent-Based Siting and Federal Interim Storage process needs to consider the following issues.

Any legal authority for DOE to take title to and liability for commercial irradiated nuclear fuel at a federal CISF, in the absence of a permanent geologic repository, was very limited as to the quantity that could be stored there (1,900 metric tons), was for emergency purposes only, and expired more than three decades ago, in 1990.

Federal CISFs would multiply the highly radioactive waste transportation risks, while accomplishing no increase whatsoever in the safety, security, health, or environmental protection associated with the storage of irradiated nuclear fuel.

Nuclear power should be phased out and abolished, so that no more highly radioactive waste will be generated. We need to stop making it in the first place. However, for highly radioactive irradiated nuclear fuel (INF) that already exists, hardened on-site storage (HOSS), or hardened near-site storage, is the best interim measure, not CISFs. HOSS, or hardened near-site storage, is the preferred interim alternative, not CISFs.

The continued operation of the U.S. nuclear reactor fleet, including the discharge of spent nuclear fuel (SNF) into lengthy time cooling pools, totally ignores the possibility of a near term collapse of the industrial infrastructure needed to maintain operation of the pool's cooling equipment. The deliberate blindness extends to statements and reports such as the following. Such blindness is portrayed in the recent film titled 'Don't Look Up.'

UN chief: World has less than 2 years to avoid 'runaway climate change'
<https://thehill.com/policy/energy-environment/406291-un-chief-the-world-has-less-than-2-years-to-avoid-runaway-climate>

UN Chief warns countries that the 'point of no return' on climate change is fast approaching
<https://www.msn.com/en-gb/news/environment/un-chief-warns-countries-that-the-point-of-no-return-on-climate-change-is-fast-approaching/ar-BBXCJHI>

UN warns that world risks becoming 'uninhabitable hell' for millions unless leaders take climate action
<https://www.cnn.com/2020/10/13/world/un-natural-disasters-climate-intl-hnk/index.html>

The planet is on a 'catastrophic' global warming path, UN report shows
<https://www.cnn.com/2021/09/17/us/catastrophic-climate-change-un-report/index.html>

Sincerely,

~ Vernon J. Brechin

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

From: Robert Brule
Sent: Friday, March 4, 2022 12:37 PM
To: Consent Based Siting
CC: Abby Piersall; Robert Avena; Steven Sinagra; Cindy Dupointe; Devito, Samantha; Grant, Ayanti; [REDACTED]; P [REDACTED]
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: Waterford Response to Interim Storage.pdf

To Whom it May Concern,

Please find attached the RFI for the Town of Waterford.

Rob Brule
First Selectman
Waterford Town Hall
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]



PRIVILEGED AND CONFIDENTIAL: This communication, including attachments, is for the exclusive use of addressee and may contain proprietary, confidential or privileged information. If you are not the intended recipient, any use, copying, disclosure, dissemination or distribution is strictly prohibited. If you're not the intended recipient, please notify the sender immediately by return email and delete this communication and destroy all copies.

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March 3, 2022

U.S. Representative Joe Courtney
55 Main Street, Suite 250
Norwich, CT 06360

RE: U.S. Department of Energy to develop and implement a consent-based siting process and to identify a process to move spent nuclear waste to interim storage sites.

Dear Congressman Courtney,

Waterford commends the U.S. Department of Energy for exploring a consent-based process to address long-term siting issues for nuclear fuel storage. The scale and longevity of impacts associated with nuclear activity demand an equitable partnership between host communities and Federal agencies. At its core, a successful consent-based siting program should provide current and potential nuclear host communities with meaningful opportunities to comment on, and final authority to approve or deny any prospective facility in their jurisdictions.

As the host community for Millstone Nuclear Station since 1970, Waterford is specially positioned to comment on both the proposed consent-based process and community issues arising from the lack of a permanent Federal disposal site. Waterford is proud to support safe, long-term, carbon neutral energy production in Southeastern Connecticut. In partnership with the Southeastern Connecticut Council of Governments (SCCOG), and at the request of Congressman Joe Courtney, Waterford is pleased to provide comments on the Department of Energy's Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities.

Waterford recognizes the need to address interim storage options, and favors a consent-based approach. The Town previously participated in CT Siting Council reviews to permit Horizontal Storage Modules (HSMs) at Millstone in support of ongoing plant operations. Enabling on-site storage was a necessary but temporary step in the absence of a permanent Federal disposal site. Moving HSMs from Millstone to a Federal site would enable productive reuse of property at Millstone to further invest in infrastructure for carbon-neutral energy projects. Millstone is a critical component of State and regional power supply, and is Connecticut's best option to achieve its carbon-neutral energy goals by 2040. Enabling materials to be removed from Waterford will provide additional capacity to support clean energy operations proximal to existing infrastructure.

Waterford further advocates for the following:

1. Removal of existing and future spent fuel from the Millstone Nuclear Station.
2. Provision of adequate security at all stages of storage and transportation, and sufficient funding to address site-specific and route-specific security needs.

3. Dissemination across multiple communication platforms of public information concerning safety protocols for the transport of any spent nuclear fuel from the Millstone site.
4. Continued support for the research and development of best practices and next generation storage of spent nuclear fuel.
5. Provision of impact funds for local emergency management operations throughout the duration of interim storage and until transfer of spent nuclear fuel at Millstone to a Federal temporary or permanent disposal location.

As the consent-based process is refined, Waterford urges consideration of a few key elements. First and foremost, communities should have final and binding opportunity to refuse siting facilities on any non-Federal land within their jurisdiction. Waterford will continue to support the safe storage of materials generated at Millstone for as long as it is necessary to maintain plant operations. Waterford would not consider accepting materials from other locations and would oppose identification of Millstone as a storage location under the new program. Second, selection of interim facility sites should take into account potential future delays in a permanent, central facility. Interim sites should be capable of operating on a semi-permanent basis and should be sized to anticipate capacity needs under current power generation conditions as well as the potential for operational expansion or emerging technologies. Finally, opportunities to co-locate interim storage where materials could be used to support research and development for next-generation nuclear operations should be considered.

Waterford also recommends that communities be afforded opportunities to participate in refining program parameters beyond the March 4th deadline. While local officials were able to meet subsequent to the January 24th request for comment, the timeframe allocated did not allow for meaningful public participation or community comments. As expressed in the DOE's Request for Information, issues of equity factor significantly into the composition of a final process. Ensuring adequate outreach and opportunity for community feedback should be a priority. Thank you for the opportunity to comment. Waterford looks forward to learning more as the Federal program is crafted and welcomes continued conversation on the matter.

Sincerely,

Robert Brule

Rob Brule
First Selectman
Town of Waterford

From: John Buchser
Sent: Friday, March 4, 2022 10:31 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI - consent-based sited and federal interim storage
Attachments: Consent Based Siting RFI response - Rio Grande Chapter, Sierra Club.pdf; Consent Based Siting RFI response - Rio Grande Chapter, Sierra Club.docx

Please refer to attached comments from the Rio Grande Chapter of the Sierra Club. They are in both docx and pdf format.

Thank you,

John Buchser

Chair, Nuclear Waste Committee

Rio Grande Chapter, Sierra Club

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Use caution if this message contains attachments, links or requests for information.

To: Office of Spent Fuel and Waste Disposition, Office of Nuclear Energy, Department of Energy
consentbasedsiting@hq.doe.gov

From: John Buchser, Chair, Nuclear Waste Committee
Rio Grande Chapter of the Sierra Club
[REDACTED]

Date: March 4, 2022

Re: RFI -- Consent-Based Siting and Federal Interim Storage

Appendices:

1. Questions the Department of Energy (DOE) has asked for which we are responding here (Referenced within this response as area # - question #)
2. Hardened On-Site Minimum Safety Requirements

Thank you for the opportunity to comment on consent as it relates to interim storage. I submit these comments on the behalf of our 10,000 members and 35,000 supporters in the Rio Grande Chapter of the Sierra Club, which includes all of New Mexico and three counties in West Texas.

Most of the potential for the DOE to establish consent is via better information flow, and dialog. Currently there is no dialog, just presentation of a limited number of 'facts'. Poor communications from the NRC (the agency which is integral to the process of creation of lots of radioactive waste) perpetuates distrust. The private companies in the nuclear industry insisting that what they do is safe adds to the mix of public trust. There are risks, recognize them and communicate that.

Essential to engagement of public, tribal and private entities is clear communications about the challenge and risks of posed by storage of high-level radioactive waste (HLW) (2-4, 2-5). Both the Nuclear Regulatory Commission (NRC) and Department of Energy (DOE) take input from the public, but no response is provided. Insofar as consent is concerned, the extensive process within the DOE in 2015 and another poorly implemented process in 2017 have only been responded to by the DOE by providing a summary of comments, but no answers or responses (2-1). The counting of comments provided is frequently trimmed to 'unique' comments. However, it is also useful to present total responses, and for non-governmental entities (NGO), the number citizens that the NGO represents.

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An effective mechanism has to be put in place that allows local, tribal, and state governments to exercise decisive decision-making power throughout the repository-development program.”

When working with local communities, especially tribal entities that have a cultural foundation which differs from that which many of us are accustomed to, it is important to engage facilitation from professionals familiar with local issues. These professionals have already started the process of engagement with tribal entities. They have at least the beginnings of understanding of the cultural differences.

Countries such as Canada and Sweden provide national government funding to non-governmental watchdog entities. The Federal Government entities responsible for nuclear waste management (and production of waste) in the US have a poor record of following up on recommendations. Expecting the public to understand the challenges of HLW management on a volunteer basis is not a sound policy.

A significant failure of this current RFI for comments is the failure to mention that the DOE is not presently allowed to host an interim storage site for HLW from commercial nuclear power generation, per the Nuclear Waste Policy Act. If the DOE is expecting constructive engagement on consent, the stage is not being set appropriately. Another example of this RFI is that there is no mention of current DOE inventory. The DOE currently has waste that would ultimately need to be placed in permanent disposal, as was mentioned at the Nuclear Waste Technical Review Board (NWTRB) meeting on March 2. (3-4)

Education of the public on options to manage HLW is critical to generate constructive input, and to facilitate useful input from the public on consent (2-1, 3-4).

The more useful question that the DOE should be asking is “What parameters should be included in order for the DOE to reach approval for siting of HLW interim storage?” As currently structured, most of the comments you receive are more likely to be “we do not consent” and “please send this dangerous waste away from us”.

The NRC is very poor at sharing information with the public. They are tasked in law to promote nuclear energy, so working collaboratively with industry to ensure safety is an important role. But how about sharing with the public the risks involved? The DOE has the opportunity to more broadly share the risks with the public. For example, the current easiest target for a terror attack is the cooling pool at a reactor site (one shoulder-launched missile would release a lot of

radioactive waste into the environment). The reactor itself is well protected, and the casks are quite resilient. (1-3, 1-4, 1-6)

The Sierra Club recently completed a document providing guidance to activists about how to engage with Federal entities on high-level waste management (full document at riograndesierraclub.org/Holtec). From the chapter on Meaningful Engagement and Consent:

“All communities in a wide area near a nuclear waste storage site should have information about the risks posed to them from the nuclear waste stored there, and ongoing access to monitoring and reporting on the management of the waste and any risk management issues and incidents. Communities should be informed through local government agencies, tribal councils, traditional media, and via the internet and social media to provide clear and complete information.

All communities over a wide geographic area should have the opportunity to engage in decision-making around planning for and installation of consolidated interim storage of nuclear waste locally and/or any transportation of the waste through the community to storage in another location.

Any impacted community for which there is consideration of locating an interim or permanent nuclear waste storage facility to accept waste from other locations must have full and complete opportunity to engage in decision-making on all aspects of the proposed project.”

This decision-making should be informed by the recommendations (pp. 47-48) of the [Blue Ribbon Commission of 2012](#); i.e., that the process is [taken verbatim]:

- "1. Consent-based—in the sense that affected communities have an opportunity to decide whether to accept facility siting decisions and retain significant local control.
2. Transparent—in the sense that all stakeholders have an opportunity to understand key decisions and engage the process in a meaningful way.
3. Phased—in the sense that key decisions are revisited and modified as necessary along the way rather than being predetermined.
4. Adaptive—in the sense that the process itself is flexible and produces decisions that are responsive to new information and new technical, social, or political developments.
5. Standards -- and science-based -- in the sense that the public can have confidence that all facilities meet rigorous, objective, and consistently-applied standards of safety and

environmental protection.

6. Governed by partnership arrangements or legally-enforceable agreements between the implementing organization and host states, tribes, and local communities.”

Does a single community not giving consent to an interim or permanent site give veto power? If a change in elected officials changes the consent from ‘no’ to ‘yes’, or vice-versa, what does that mean? If a local bunch of politicians says ‘yes’ (as in the case of the Holtec proposal in NM), but the Governor and elected officials in DC say ‘no’, shouldn’t that be important and qualify as a ‘no’? Does a tribal entity get veto power? Most of the US was occupied by tribes before we took the land away from them, and then the US violated many if not all the treaties. (1-2, 1-3)

It is clear from the content of the meetings of the NWTRB that there is an effort to understand the technical issues of HLW containment and long-term disposal. It has been noted by researchers reporting to the NWTRB that the current analysis on permanent disposal has been limited by the designation of a permanent disposal site. The most-studied alternatives for long-term disposal are deep geologic waste emplacement. There are four broad categories: crystalline rock, clay-based rock, salt, and volcanic rock. The NWTRB should suggest to the DOE that at least one site in each geologic category (and preferably two or more sites per category) be extensively studied. Even with excellent funding, this process will take a decade or more, and should be started as soon as possible.

Tribal entities have been particularly negatively impacted by the development of nuclear resources. The remnants of mining for uranium in support of the development of the nuclear bomb have still not been cleaned up, and the health impacts to tribal members are significant. This is a major barrier to trust when engaging tribal entities (1-1). Without establishing trust, rejection of any alternative, whether an interim storage site or permanent disposal, tribal support is not likely (1-4).

Within the US, there is not broad support for interim storage. If the current locations in NM (Holtec) and west TX (WCS/ISP) currently being licensing by the NRC are any indication, it appears that there will be a major effort to transfer large quantities of HLW, primarily from the eastern US. In any given location for interim storage, the question arises as to the equity of that solution. The Holtec and WCS/ISP sites are (a) in a primarily Hispanic population area, (b) sparsely populated, (c) close to Mexico, and (d) in the Permian Basin, the largest area of oil and gas (O&G) production in the US. This is not equitable to the US Hispanic population (1-1) or to Mexico, nor is it sensible to put the risk of an accident on the O&G industry. The world is still heavily dependent on O&G – it does not make sense to add risk to that industry, which is so important to our economy.

The most reliable rail for transport of heavy casks full of HLW in the US goes thru major cities. A lot of industry is closely located to rail. A lot of poor people are close to rail. The probability

of accidents and terror attacks will be higher in urban railyards. This puts both US industry and minorities (generally poorer) at greater risk (1-1). Reassuring the public that the risk is minimized by taking as short a path as possible to permanent disposal (1-5) is more likely to reach a greater level of consent. If the best path to permanent disposal or interim storage is thru less-populated areas, expecting volunteer fire departments to respond to accidents where post-accident management is very specialized is not a sound approach.

The private companies manufacturing containment systems claim excellent integrity of their systems for 50 years or more. But sometime in the 60 to 100 year timeframe, the waste will need re-packaging if not moved to a permanent repository. Re-packaging of casks is an expensive process, and the process entails a high level of risk. There are clear guidelines on hardened on-site storage that to date have been largely ignored by the NRC and the commercial nuclear power industry. (See appendix 2, Hardened On-Site Minimum Safety Requirements). The containment systems currently in use should be fine within the timeframe needed to develop long-term disposal. If there are circumstances that necessitate movement of the waste sooner than the completion of long-term disposal sites, minimization of transport should be a primary consideration. Interim storage by the DOE should be avoided, as it creates additional risk.

Much of the literature on HLW disposal strategies is very difficult for the public to understand. In the case of research and development, given the technical nature of the work, there is a lot of specialization and thus a narrow focus to publicly available information. Many things are unsaid due to proprietary considerations or information that would facilitate attempts at sabotage. Summaries of a path forward, for example, the report “Blue Ribbon Commission on America’s Nuclear Future (BRC)” (https://www.energy.gov/sites/default/files/2013/04/f0/brc_finalreport_jan2012.pdf) and top-level summaries like “Geologic Disposal of High-Level Radioactive Waste—Status, Key Issues, and Trends” (Birkholzer et.al., Lawrence Berkley National Laboratory, <https://www.osti.gov/servlets/purl/1210901>) are good intermediate-level educational opportunities for public education. The DOE should be developing summaries for the public that could reference these types of documents. Trust by the public in science, and discussion from DOE which enhances the knowledge of the public (currently no discussion from DOE, just ‘we tell you this’ and ‘what do you think’). (1-3, 1-4, 1-5, 2-1, 2-2, 2-3, 2-5)

States and areas that have benefited from nuclear power production should be host to interim storage. Interim storage should be used only when necessary due to risks existing at currently-licensed reactors. Reactors should not have licenses extended. More waste is more risk. Establishment of multiple permanent repositories should be the primary goal of the DOE.

The oldest HLW, and thus probably the most-risky HLW should be targeted to be sent to permanent disposal first. The improvements in cladding design of fuel pellets deployed over the last 20 years should lead to more reliability and less risk in movement of waste. Minimization of movement, hopefully from reactor site to permanent emplacement, should be the primary goal.

The NWTRB is currently the most responsible Federal entity in terms of information flow to the public on nuclear waste management. Research paths currently being pursued are frequently the result of recommendations from the NWTRB. The safest path and thus the most likely path to obtain consent may have barriers in current law. The NWTRB should be making suggestions on needed changes to law.

The path to consent needs to be built on the path to consent for permanent disposal. Consolidated interim storage facilities should not be the focus of consent.

Appendix 1 (questions the DOE is asking for comments on):

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?
2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?
3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?
4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?
5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?
6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?
7. What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?
3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?
4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?
5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?
2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?
3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?
4. What other issues should the Department consider in developing a waste management system?

Appendix 2 – Hardened On-Site Minimum Safety Requirements

Radioactive waste storage systems must be designed, fabricated and maintained to prevent radioactive leaks, both short-term and long-term. The Nuclear Regulatory Commission does not require such prevention.

The US government must establish and enforce requirements to prevent radioactive leaks into our environment. These requirements should include, but not be limited to, the minimum requirements set forth below.

These requirements apply to highly radioactive waste including irradiated (“spent”) nuclear fuel and Greater-than-Class-C (GTCC) waste stored or planned to be stored in dry storage containers and systems.

The Minimum Safety Requirements (as compiled by Nuclear Information Research Service) are:

1. Require the capability to inspect, maintain, monitor and repair all nuclear waste containers, and as needed, their contents, in order to prevent radioactive leaks at each storage site. This requirement must apply to existing and new dry storage systems.
 - A. Require early warning systems designed to prevent radioactive leaks. Require continuous and remote monitoring systems for early detection of degradation of containers and their contents that allow time to repair or replace parts or entire containers before radioactive leaks occur. Require monitoring for heat and helium to provide early warning. (For example: detection of pressure changes in lids may require a metal seal replacement.)
 - B. Require continuous radiation monitoring systems, including on-line, real-time radiation monitoring and publicly accessible reporting to ensure that radioactive leakage is detected immediately.
 - C. Require the capability to retrieve and transfer nuclear waste from one container to another at the current site. Because containers and their contents will require maintenance and could degrade or fail at any time before the waste is transferred to a permanent repository/isolation facility, the industry must deploy proven, demonstrated

technologies and procedures for transferring high-level waste from a damaged or degraded container to a new container.

2.Require secure, Hardened, On-Site Storage (HOSS). Containers must be stored in hardened facilities, as close to the point of generation as is safely possible in order to protect against environmental, health and security hazards. See Principles for Safeguarding Nuclear Waste at Reactor Sites.

http://ieer.org/wp/wp-content/uploads/2010/03/HOSS_PRINCIPLES_3-23-10x.pdf

3.Require capability to minimize the duration and level of radioactive release and exposure, in case of a breach. (For example, storage in a structure designed to isolate radioactivity from the environment, climate controlled with HEPA filters in the ventilation exhaust system.)

4.Require best available materials, fabrication and designs for longer, safer storage times and less risky transport. (For example: Materials must not be susceptible to corrosion and/or cracking, and structures must have no single points of failure.)

5.Fuel assemblies, fuel baskets and containers must be inspected for damage prior to transport, as required by the Nuclear Waste Policy Act and Standard Contracts.

6.Require and enforce the highest standards of independent nuclear Quality Assurance for the design, fabrication, use, maintenance, and replacement of dry storage systems.

The undersigned organizations support the above Minimum Safety Requirements for highly radioactive waste including irradiated nuclear fuel and Greater-than-Class-C (GTCC) waste stored or planned to be stored in dry storage containers. These requirements are needed to prevent reasonably foreseeable short-term and long-term radioactive leaks into the environment. Support for less dangerous, hardened dry nuclear waste storage does not constitute a statement of support for pool storage, nuclear energy or the generation of more radioactive waste.

To: Office of Spent Fuel and Waste Disposition, Office of Nuclear Energy, Department of Energy
consentbasedsiting@hq.doe.gov

From: John Buchser, Chair, Nuclear Waste Committee
Rio Grande Chapter of the Sierra Club
[REDACTED]

Date: March 4, 2022

Re: RFI -- Consent-Based Siting and Federal Interim Storage

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environmental protection.

6. Governed by partnership arrangements or legally-enforceable agreements between the implementing organization and host states, tribes, and local communities.”

Does a single community not giving consent to an interim or permanent site give veto power? If a change in elected officials changes the consent from ‘no’ to ‘yes’, or vice-versa, what does that mean? If a local bunch of politicians says ‘yes’ (as in the case of the Holtec proposal in NM), but the Governor and elected officials in DC say ‘no’, shouldn’t that be important and qualify as a ‘no’? Does a tribal entity get veto power? Most of the US was occupied by tribes before we took the land away from them, and then the US violated many if not all the treaties. (1-2, 1-3)

It is clear from the content of the meetings of the NWTRB that there is an effort to understand the technical issues of HLW containment and long-term disposal. It has been noted by researchers reporting to the NWTRB that the current analysis on permanent disposal has been limited by the designation of a permanent disposal site. The most-studied alternatives for long-term disposal are deep geologic waste emplacement. There are four broad categories: crystalline rock, clay-based rock, salt, and volcanic rock. The NWTRB should suggest to the DOE that at least one site in each geologic category (and preferably two or more sites per category) be extensively studied. Even with excellent funding, this process will take a decade or more, and should be started as soon as possible.

Tribal entities have been particularly negatively impacted by the development of nuclear resources. The remnants of mining for uranium in support of the development of the nuclear bomb have still not been cleaned up, and the health impacts to tribal members are significant. This is a major barrier to trust when engaging tribal entities (1-1). Without establishing trust, rejection of any alternative, whether an interim storage site or permanent disposal, tribal support is not likely (1-4).

Within the US, there is not broad support for interim storage. If the current locations in NM (Holtec) and west TX (WCS/ISP) currently being licensing by the NRC are any indication, it appears that there will be a major effort to transfer large quantities of HLW, primarily from the eastern US. In any given location for interim storage, the question arises as to the equity of that solution. The Holtec and WCS/ISP sites are (a) in a primarily Hispanic population area, (b) sparsely populated, (c) close to Mexico, and (d) in the Permian Basin, the largest area of oil and gas (O&G) production in the US. This is not equitable to the US Hispanic population (1-1) or to Mexico, nor is it sensible to put the risk of an accident on the O&G industry. The world is still heavily dependent on O&G – it does not make sense to add risk to that industry, which is so important to our economy.

The most reliable rail for transport of heavy casks full of HLW in the US goes thru major cities. A lot of industry is closely located to rail. A lot of poor people are close to rail. The probability

of accidents and terror attacks will be higher in urban railyards. This puts both US industry and minorities (generally poorer) at greater risk (1-1). Reassuring the public that the risk is minimized by taking as short a path as possible to permanent disposal (1-5) is more likely to reach a greater level of consent. If the best path to permanent disposal or interim storage is thru less-populated areas, expecting volunteer fire departments to respond to accidents where post-accident management is very specialized is not a sound approach.

The private companies manufacturing containment systems claim excellent integrity of their systems for 50 years or more. But sometime in the 60 to 100 year timeframe, the waste will need re-packaging if not moved to a permanent repository. Re-packaging of casks is an expensive process, and the process entails a high level of risk. There are clear guidelines on hardened on-site storage that to date have been largely ignored by the NRC and the commercial nuclear power industry. (See appendix 2, Hardened On-Site Minimum Safety Requirements). The containment systems currently in use should be fine within the timeframe needed to develop long-term disposal. If there are circumstances that necessitate movement of the waste sooner than the completion of long-term disposal sites, minimization of transport should be a primary consideration. Interim storage by the DOE should be avoided, as it creates additional risk.

Much of the literature on HLW disposal strategies is very difficult for the public to understand. In the case of research and development, given the technical nature of the work, there is a lot of specialization and thus a narrow focus to publicly available information. Many things are unsaid due to proprietary considerations or information that would facilitate attempts at sabotage. Summaries of a path forward, for example, the report “Blue Ribbon Commission on America’s Nuclear Future (BRC)” (https://www.energy.gov/sites/default/files/2013/04/f0/brc_finalreport_jan2012.pdf) and top-level summaries like “Geologic Disposal of High-Level Radioactive Waste—Status, Key Issues, and Trends” (Birkholzer et.al., Lawrence Berkley National Laboratory, <https://www.osti.gov/servlets/purl/1210901>) are good intermediate-level educational opportunities for public education. The DOE should be developing summaries for the public that could reference these types of documents. Trust by the public in science, and discussion from DOE which enhances the knowledge of the public (currently no discussion from DOE, just ‘we tell you this’ and ‘what do you think’). (1-3, 1-4, 1-5, 2-1, 2-2, 2-3, 2-5)

States and areas that have benefited from nuclear power production should be host to interim storage. Interim storage should be used only when necessary due to risks existing at currently-licensed reactors. Reactors should not have licenses extended. More waste is more risk. Establishment of multiple permanent repositories should be the primary goal of the DOE.

The oldest HLW, and thus probably the most-risky HLW should be targeted to be sent to permanent disposal first. The improvements in cladding design of fuel pellets deployed over the last 20 years should lead to more reliability and less risk in movement of waste. Minimization of movement, hopefully from reactor site to permanent emplacement, should be the primary goal.

The NWTRB is currently the most responsible Federal entity in terms of information flow to the public on nuclear waste management. Research paths currently being pursued are frequently the result of recommendations from the NWTRB. The safest path and thus the most likely path to obtain consent may have barriers in current law. The NWTRB should be making suggestions on needed changes to law.

The path to consent needs to be built on the path to consent for permanent disposal. Consolidated interim storage facilities should not be the focus of consent.

Appendix 1 (questions the DOE is asking for comments on):

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?
2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?
3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?
4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?
5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?
6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?
7. What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?
3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?
4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?
5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?
2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?
3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?
4. What other issues should the Department consider in developing a waste management system?

Appendix 2 – Hardened On-Site Minimum Safety Requirements

Radioactive waste storage systems must be designed, fabricated and maintained to prevent radioactive leaks, both short-term and long-term. The Nuclear Regulatory Commission does not require such prevention.

The US government must establish and enforce requirements to prevent radioactive leaks into our environment. These requirements should include, but not be limited to, the minimum requirements set forth below.

These requirements apply to highly radioactive waste including irradiated (“spent”) nuclear fuel and Greater-than-Class-C (GTCC) waste stored or planned to be stored in dry storage containers and systems.

The Minimum Safety Requirements (as compiled by Nuclear Information Research Service) are:

1. Require the capability to inspect, maintain, monitor and repair all nuclear waste containers, and as needed, their contents, in order to prevent radioactive leaks at each storage site. This requirement must apply to existing and new dry storage systems.
 - A. Require early warning systems designed to prevent radioactive leaks. Require continuous and remote monitoring systems for early detection of degradation of containers and their contents that allow time to repair or replace parts or entire containers before radioactive leaks occur. Require monitoring for heat and helium to provide early warning. (For example: detection of pressure changes in lids may require a metal seal replacement.)
 - B. Require continuous radiation monitoring systems, including on-line, real-time radiation monitoring and publicly accessible reporting to ensure that radioactive leakage is detected immediately.
 - C. Require the capability to retrieve and transfer nuclear waste from one container to another at the current site. Because containers and their contents will require maintenance and could degrade or fail at any time before the waste is transferred to a permanent repository/isolation facility, the industry must deploy proven, demonstrated

technologies and procedures for transferring high-level waste from a damaged or degraded container to a new container.

2.Require secure, Hardened, On-Site Storage (HOSS). Containers must be stored in hardened facilities, as close to the point of generation as is safely possible in order to protect against environmental, health and security hazards. See Principles for Safeguarding Nuclear Waste at Reactor Sites.

http://ieer.org/wp/wp-content/uploads/2010/03/HOSS_PRINCIPLES_3-23-10x.pdf

3.Require capability to minimize the duration and level of radioactive release and exposure, in case of a breach. (For example, storage in a structure designed to isolate radioactivity from the environment, climate controlled with HEPA filters in the ventilation exhaust system.)

4.Require best available materials, fabrication and designs for longer, safer storage times and less risky transport. (For example: Materials must not be susceptible to corrosion and/or cracking, and structures must have no single points of failure.)

5.Fuel assemblies, fuel baskets and containers must be inspected for damage prior to transport, as required by the Nuclear Waste Policy Act and Standard Contracts.

6.Require and enforce the highest standards of independent nuclear Quality Assurance for the design, fabrication, use, maintenance, and replacement of dry storage systems.

The undersigned organizations support the above Minimum Safety Requirements for highly radioactive waste including irradiated nuclear fuel and Greater-than-Class-C (GTCC) waste stored or planned to be stored in dry storage containers. These requirements are needed to prevent reasonably foreseeable short-term and long-term radioactive leaks into the environment. Support for less dangerous, hardened dry nuclear waste storage does not constitute a statement of support for pool storage, nuclear energy or the generation of more radioactive waste.

From: Jessica Bufford
Sent: Tuesday, March 1, 2022 7:55 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: NTI_DSFS Siting Framework 2022.pdf

Dear Office of Spent Fuel and Waste Disposition,

Please find below and attached a contribution to the request for information on how to site Federal facilities for the temporary, consolidated storage of spent nuclear fuel using a consent-based approach.

Contact Information

Organization: The Nuclear Threat Initiative (NTI)
Contact name: Jessica Bufford

[REDACTED]
[REDACTED]
[REDACTED]

Introduction

The Nuclear Threat Initiative is a nonprofit, nonpartisan global security organization based in Washington, DC focused on reducing nuclear and biological threats imperiling humanity. In 2013, NTI launched the Developing Spent Fuel Strategies (DSFS) project to help strengthen global approaches to spent fuel management. The project has created a network of nuclear fuel cycle experts in the Pacific Rim to develop solutions to shared spent fuel management problems and explore ways to address broader fuel cycle concerns.

As part of this project, leading U.S. and international experts have recently prepared a new paper entitled *A Common Framework for the Safe, Secure, and Socially Acceptable Siting of Geological Disposal Facilities for High Level and Long-Lived Intermediate Level Radioactive Waste (the Framework)*. The paper is based upon the importance of a consent-based siting process. We at NTI believe that many of the questions raised in the RFI for Consent-Based Siting and Federal Interim Storage are addressed in the Framework and are pleased to submit it to you in support of the DOE objectives outlined in the RFI moving toward the restart of a successful U.S. spent fuel and high-level nuclear waste management program. That framework paper is attached for your reference.

Best regards,
Jessica

Jessica Bufford, Program Officer, Nuclear Material Security



Nuclear Threat Initiative

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The Pacific Rim Spent Fuel Management Partnership Working Group

A Common Framework for the Safe, Secure, and Socially Acceptable Siting of Geological Disposal Facilities for High-Level and Long-Lived Intermediate Level Radioactive Waste

February 2022

More on the Pacific Rim Spent Fuel Management Partnership Working Group can be found here:
<https://www.nti.org/about/programs-projects/project/developing-spent-fuel-strategies/>

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The Nuclear Threat Initiative

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Executive Summary

The International Atomic Energy Agency (IAEA) estimates that more than 22,000 m³ of radioactive High-Level Waste (HLW) and 460,000 m³ of Intermediate-Level Waste (ILW) had been produced worldwide in 2018, the most recent year for which estimates are available. Both HLW and long-lived ILW require long-term management methods that do not rely on institutional controls because of the timescales over which they remain hazardous. Disposal in geological disposal facilities is internationally accepted as the most appropriate method for long-term management of these types of waste, and it is the method being pursued by most countries with nuclear programs. However, most of the current HLW and ILW inventory remains in interim storage facilities. Although storage is a necessary step of the back end of the nuclear fuel cycle, a more sustainable solution is required.

Social and political difficulties have delayed and, in many cases prevented, implementing geological disposal facilities for HLW. Failure to find an acceptable and sustainable solution to this problem threatens national, regional, and international safety and security; increases proliferation risks; strains the credibility of the nuclear community; undercuts public and political acceptance for all nuclear fuel cycle activities; and adversely impacts serious efforts to address climate change.

In 2013, the Nuclear Threat Initiative (NTI) launched the Developing Spent Fuel Strategies project to strengthen global approaches to nuclear materials management, leading to the establishment of a network of nuclear fuel cycle experts in the Pacific Rim to develop solutions to shared radioactive waste management issues and explore ways to address broader fuel cycle concerns.

Efforts to develop sustainable solutions for the long-term management of HLW have been ongoing for decades, and most programs around the world have experienced both successes and failures. As science and societal expectations have evolved, it has become increasingly clear that stakeholder involvement and public confidence are key to success.

Building and sustaining public confidence is a significant challenge. It is influenced by a wide range of constantly evolving economic, social, political, and science and technology landscapes that are specific to each country. Although there is no universal template for the right path, there are common themes and approaches that can be used to assemble the building blocks for public confidence and acceptance. International experience suggests the following pillars would increase the chances of success for siting geological disposal facilities:

- A compelling case and narrative for geological disposal;
- A flexible, phased, and adaptable participatory approach grounded on mutual trust and respect, with a clear and transparent decision-making process;
- A comprehensive national legislative and regulatory framework, sustained by political will and commitment.

This document describes a common framework for the safe, secure, and socially acceptable siting of deep geological disposal facilities for HLW and long-lived ILW based on lessons learned from around the world. The framework focuses on key managerial and societal aspects that need to be holistically considered when developing a socially acceptable disposal program. It outlines key pillars and approaches that would increase the likelihood of success. The framework is meant to be a flexible tool

that can be augmented and adapted, taking into account each country's specific social, political, and economic conditions.

Introduction

The IAEA estimates that more than 22,000 m³ of HLW and 460,000 m³ of ILW had been produced in 2018, the most recent year for which estimates are available. HLW includes radioactive material with significant heat generation and large amounts of long-lived radionuclides, such as that used nuclear fuel as well as waste from reprocessing used fuel. ILW typically comprises resins, chemical sludges, and metal fuel cladding, as well as contaminated reactor components. ILW may contain long-lived radionuclides that will not decay to acceptable levels over the time they are under institutional controls. Long-lived ILW represents a small percentage of the volume and activity of radioactive waste. This type of waste is typically not suitable for near-surface disposal facilities and requires underground disposal at depth.

Both HLW and long-lived ILW require management approaches that do not rely on institutional controls because they remain hazardous over an extended time. Disposal in geological disposal facilities is internationally accepted as the most appropriate method available today for the long-term management of these waste streams. It is the method that is being pursued by most countries with nuclear programs. However, all HLW is currently managed on an interim basis in surface storage facilities, mostly at nuclear sites. About 20 percent of ILW is currently managed in disposal facilities, with the rest in interim storage.¹

Social and political difficulties have delayed and, in many cases prevented, implementing geological disposal facilities for HLW. Failure to find an acceptable and sustainable solution to this problem threatens national, regional, and international safety and security; increases proliferation risks; strains the credibility of the nuclear community; undercuts public and political acceptance for nuclear fuel cycle activities; and adversely impacts serious efforts to address climate change.

In 2013, NTI launched the Developing Spent Fuel Strategies project to strengthen global approaches to nuclear materials management, leading to the establishment of a network of nuclear fuel cycle experts in the Pacific Rim to develop solutions to shared radioactive waste management issues and explore ways to address broader fuel cycle concerns. The NTI Pacific Rim Spent Fuel Management Partnership Siting Working Group was established as an international forum for sharing experiences on the technical and non-technical challenges related to siting and implementing geological disposal facilities. The working group included participants from Australia, Canada, Japan, South Korea, Taiwan, and the United States (see Appendix A).

This document, developed by the working group, describes a common framework for the safe, secure, and socially acceptable siting of deep geologic facilities based on lessons learned from around the world. The framework focuses on key important managerial and societal aspects that need to be holistically considered when developing a socially acceptable disposal program. It outlines key pillars and

¹ International Atomic Energy Agency, *Status and Trends in Spent Fuel and Radioactive Waste Management*, IAEA Nuclear Energy Series No. NW-T-1.14, 2018, https://www-pub.iaea.org/MTCD/Publications/PDF/P1799_web.pdf.

approaches that would increase the likelihood of success. The framework is meant to be a flexible tool that can be augmented and adapted, taking into account each country's specific social, political, and economic conditions. For the purpose of this document, stakeholders refer to individuals; groups; organizations; and communities that are either directly or indirectly affected by, interested in, or can influence the siting initiative.

The document does not address many technical and stakeholders' engagement aspects associated with the various phases of implementing disposal programs such as siting, site characterization, safety assessment, construction, and operation.

Numerous publications provide detailed guidance on the many societal and technical aspects related to developing and implementing geological disposal facilities. The Nuclear Energy Agency (NEA) has published many documents on the technical and social aspects related to the long-term management of HLW. The IAEA also has developed the comprehensive *Generic Roadmap Towards Implementing a Deep Geological Repository*² as well as a series of training courses on the topic.

The Need for Public Input and Trust-Building in the Long-Term Management of HLW

Efforts to develop sustainable solutions for the long-term management of HLW have been ongoing for decades. This has led to unprecedented scientific research and international collaboration, mainly driven by the recognition that a long-term solution is needed. Most programs around the world have experienced both successes and failures, and we have learned a great deal as science and societal expectations continue to evolve.³

² International Atomic Energy Agency, *Generic Roadmap Towards Implementing a Deep Geological Repository*, forthcoming 2021, <https://www.iaea.org/about/organizational-structure/departments-of-nuclear-energy/division-of-nuclear-fuel-cycle-and-waste-technology/waste-technology-section>.

³ Nuclear Waste Management Organization, *Choosing a Way Forward: The Future Management of Canada's Used Nuclear Fuel*, November 2005, https://www.nwmo.ca/~media/Site/Files/PDFs/2015/11/04/17/30/341_NWMO_Final_Study_Nov_2005_E.ashx?la=en; Nuclear Waste Management Organization, *Choosing a Way Forward: The Future Management of Canada's Used Nuclear Fuel, A Summary*, 2005, https://www.nwmo.ca/~media/Site/Reports/2015/11/11/06/53/342_NWMO_Final_Study_Summary_E.ashx?la=en; Nuclear Energy Agency Organisation for Economic Co-Operation and Development, *Communication on the Safety Case for a Deep Geological Repository*, NEA No. 7336, 2017, https://www.oecd-neo.org/jcms/pl_15032/communication-on-the-safety-case-for-a-deep-geological-repository?details=true; Nuclear Energy Agency Organisation for Economic Co-Operation and Development, *Management and Disposal of High-Level Radioactive Waste: Global Progress and Solutions*, NEA No. 7532, 2020, https://www.oecd-neo.org/jcms/pl_32567/management-and-disposal-of-high-level-radioactive-waste-global-progress-and-solutions; Nuclear Energy Agency Organisation for Economic Co-Operation and Development, *International Roundtable on the Final Disposal of High-Level Radioactive Waste and Spent Fuel*, NEA No. 7529, 2020, https://www.oecd-neo.org/jcms/pl_39718/international-roundtable-on-the-final-disposal-of-high-level-radioactive-waste-and-spent-fuel-summary-report; U.S. Department of Energy, *Blue Ribbon Commission on America's Nuclear Future Report to the Secretary of Energy*, January 26, 2012; U.S. Department of Energy, *Designing a Consent-based Siting Process, Summary of Public Input*, Final Report, December 2016.

One of the most important lessons is that stakeholder involvement and public confidence are key to success. Because safety has obvious and important implications for society, at some level, the public must have a role to play in judging whether projects that affect them are safe.⁴ This means people need to understand what decisions need to be made and their role in the decision-making process. Although any preferred technical option must be based on sound science, it also should reflect people's expectations and perspectives on safety.

Experience shows that public acceptance of and confidence in the safe and secure long-term management of HLW and long-lived ILW requires a dialogue-driven approach that is responsive to people's questions, priorities, and expectations. Building and sustaining public confidence is a complex issue. It is influenced by constantly evolving economic, social, and political landscapes that are specific to each country, as well as advances in science and technology.

Although no universal template exists for the right approach, common themes and methods can be used to assemble the building blocks for public confidence and acceptance. International experience suggests a successful approach can be built on the following interrelated pillars:

1. A compelling case and narrative for geological disposal that answers the following questions:
 - What is the problem and why should it be addressed now?
 - What are today's social priorities and expectations regarding the long-term management of radioactive waste?
 - What waste management approaches are available today?
 - Why is geological disposal the method that responds best to citizens' values, principles, and expectations?
2. A flexible, phased, and adaptable participatory approach grounded on mutual trust and respect, with a clear and transparent decision-making process; and
3. A comprehensive national legislative and regulatory framework, sustained by political will and commitment.

Common themes related to the above pillars are discussed in more detail in the following sections. The proposed approaches and guidance must be tailored and adapted to the specific needs and sociopolitical conditions of each disposal program.

The Need for a Compelling Narrative to Make the Case for Geological Disposal

Geological disposal is widely accepted within the scientific community as the best method available today for the safe long-term management of HLW and long-lived ILW in a passive manner that does not require long-term institutional controls. Most countries with nuclear programs are pursuing the

⁴ Canadian Environmental Assessment Agency, *Report of the Nuclear Fuel Waste Management and Disposal Concept Environmental Assessment Panel*, February 1998, https://www.ceaa.gc.ca/archives/pre-2003/431C8844-1/default_lang=En_n=0B83BD43-1.html.

development of geological disposal facilities supported by robust international cooperation programs to ensure that the best knowledge and practices are used.

However, this international consensus among experts is not widely reflected in the public and confidence varies significantly. Public acceptance and confidence require open, transparent, and inclusive two-way dialogues but frequently, technical arguments dominate the narrative, with little focus on societal and ethical aspects, such as intergenerational equity issues that must be addressed by those who today and in the future will benefit from nuclear energy.⁵

A new narrative must clearly and compellingly articulate the societal need that will be served by siting a geological disposal facility. It should give members of a host community the ability to respond clearly and convincingly when a relative or a skeptic questions the societal benefit of hosting a disposal facility in the community. The narrative should also include well-articulated safety case arguments that describe how geological disposal would protect current and future generations as well as the environment from spent fuel. Finally, the narrative must articulate the added value associated with the disposal facility and how it will enhance the quality of life of the host community in a sustainable manner, considering the many lenses of well-being.

A compelling narrative is best developed and validated with early participation of key stakeholders, considering each country's specific social and political conditions. Many countries have expended great effort engaging their citizens, to varying degrees of success, on the societal and technical questions that need to be asked when considering approaches for the long-term management of HLW. Experience from failures and successes suggests a compelling narrative can be derived and validated using the following steps:

Acknowledging the nature of the hazard associated with HLW and long-lived ILW and the limitations of interim prolonged storage. This requires engaging the public and other key stakeholders in a discussion around the nature of the radiological and chemical hazards associated with radioactive waste and the need for a sustainable long-term management approach. A key fact that emerged from dialogues with experts around the world is that HLW and long-lived ILW will remain a hazard for people and the environment over significant timescales, and interim storage is not a sustainable approach in the long-term because it relies on institutional controls that cannot be guaranteed over the timescales over which the waste will remain a hazard.

Identifying key stakeholders that need to be involved and understanding how they want to be involved. This is best achieved through inclusive early dialogues with individuals, groups, and organizations such as civil society groups, including opposition groups, youth, social and technical

⁵ Nuclear Energy Agency Organisation for Economic Co-Operation and Development, *Management and Disposal of High-Level Radioactive Waste: Global Progress and Solutions*, NEA No. 7532, 2020, https://www.oecd-nea.org/jcms/pl_32567/management-and-disposal-of-high-level-radioactive-waste-global-progress-and-solutions; Nuclear Energy Agency Organisation for Economic Co-Operation and Development, *International Roundtable on the Final Disposal of High-Level Radioactive Waste and Spent Fuel*, NEA No. 7529, 2020, https://www.oecd-nea.org/jcms/pl_39718/international-roundtable-on-the-final-disposal-of-high-level-radioactive-waste-and-spent-fuel-summary-report; Nuclear Waste Management Organization *Choosing a Way Forward: The Future Management of Canada's Used Nuclear Fuel*, November 2005, https://www.nwmo.ca/~media/Site/Files/PDFs/2015/11/04/17/30/341_NWMO_Final_Study_Nov_2005_E.ashx?la=en.

experts, elected officials, regulators, and others to understand who they are, what interests they have, and how they want to be involved. Early involvement and understanding mutual expectations will strengthen the process and, ultimately, the narrative. The engagement and dialogue approaches should be innovative and adapted to each stakeholder's needs. Sustained engagement is required throughout the phases of implementation of geological disposal facilities.

Understanding societal values and cultural norms, priorities, and expectations. This requires engaging the public and other key stakeholders to identify the key social and technical questions and principles that need to be considered when evaluating radioactive waste management approaches. Experience to-date shows that although people have expressed a diversity of views, they tend to agree on the following:⁶

- Today's generation benefits from nuclear energy and owes it to future generations to lay the groundwork for safely and securely disposing radioactive waste.
- Safety and community well-being should be the top priorities.
- Best scientific knowledge and international practices should be considered.
- Ability to retrieve the waste in the future should be considered.
- The management approach should remain flexible and willing to adapt to future changes in technology and societal expectations.

Evaluating available waste management alternatives. Identifying a socially acceptable long-term management approach requires assessing available options and identifying the approach that responds best to citizen values, priorities, and expectations. The assessment framework should include citizen involvement and build on the social and technical questions that citizens identify as important.

A vast amount of work has been conducted internationally over the last decades to explore possible methods for safely managing HLW. For example, in Canada, a three-year dialogue with the Canadians public and other key stakeholders explored 14 possible waste management alternatives ranging from geological disposal, centralized interim storage, disposal in the ocean floor, disposal in subduction zones, etc.⁷ At the end of the dialogue, organizers found that geological disposal met most of the stakeholder's values, principles, and objectives. It is a technically sound method that will safely contain and isolate HLW for generations to come and is the method that responds best to societal values, priorities, and expectations.

⁶ Nuclear Waste Management Organization, *Choosing a Way Forward: The Future Management of Canada's Used Nuclear Fuel*, November 2005, https://www.nwmo.ca/~media/Site/Files/PDFs/2015/11/04/17/30/341_NWMO_Final_Study_Nov_2005_E.ashx?la=en

⁷ Nuclear Waste Management Organization, *Choosing a Way Forward: The Future Management of Canada's Used Nuclear Fuel*, November 2005, https://www.nwmo.ca/~media/Site/Files/PDFs/2015/11/04/17/30/341_NWMO_Final_Study_Nov_2005_E.ashx?la=en

The Management Approach: Adaptable, Transparent, Fair, and Inclusive

International experience shows that public confidence and acceptance require a dialogue-driven approach where stakeholders are involved from the very beginning. This requires a management approach that is adaptable and grounded in fairness, trust, and respect. The approach should aim to create safe spaces for dialogue with interested communities and other stakeholders.

The decision-making process for the implementation approach should clearly identify decision points, decision criteria, and who is involved in making those decisions. Communities and stakeholders should be provided with the resources they need to fully participate in the various stages of planning and implementation. The management approach should ideally consider the following components:

- A socially acceptable, fair, and inclusive siting process designed to seek an informed and willing host.
- Comprehensive community engagement programs to build awareness and, ultimately, acceptance.
- A commitment to engage in a two-way dialogue with citizens on the safety of geological disposal to understand their perspectives and address their questions and concerns.
- A commitment to explore how to implement the project in partnership with the local communities in a manner that will enhance their quality of life, considering the many lenses of well-being.

The following sections expand on the above considerations.

Socially Acceptable Siting Process

An inclusive, fair, and transparent siting process developed with the involvement of citizens is central to gain trust and confidence. Key considerations include:

- A series of guiding principles and commitments, including a strong commitment to seek an informed and willing host (voluntary process).
- An understanding that communities control their participation in the process and have a safe space to learn about the project so they can make an informed decision.
- A stepwise site evaluation process with key milestones and clear technical and social site evaluation factors.
- A transparent decision-making process outlining the decisions to be made, when they need to be made, and who will make them. The role of the communities, proponents, and regulatory authorities in the decision-making process should also be clearly outlined.
- The community should demonstrate a clear willingness to host. There is no universal definition of willingness and how it should be measured and demonstrated by potential host communities. It is influenced by social, cultural, and political conditions that are specific to each country and region.
- The site evaluation process and decision-making schedule should allow for sufficient time for communities to learn about the project and make an informed decision.

- A commitment to provide communities with the financial and human resources they need to build their capacity and participate in the site selection process.

Comprehensive and Sustained Local and Regional Engagement Programs to Build Awareness and Ultimately Support

Implementing organizations need to have comprehensive and sustained engagement programs with clear goals and deliverables. The programs should be developed in collaboration with the target audiences to ensure their specific needs are met. Engagement programs should aim to build awareness and acceptance within a wide range of stakeholders such as the public, local potential host communities and their neighbors, youth, local and regional media outlets, elected officials, civil society organizations, and key local and regional opinion leaders.

The engagement programs should be adequately resourced and led by trained staff and contractors who are able to convey the narrative and communicate complex technical topics in an easily understandable manner. All staff and contractors need to have a good awareness and understanding of local and regional cultural practices and sensitivities. The engagement programs should be inclusive and delivered in local languages and dialects as appropriate.

Potential host communities should also have their own independent engagement programs. A good practice is establishing local community committees with a mandate to facilitate objective and impartial learning within the community. These committees are typically led by the community and include a cross-section of community members willing to advocate for providing community members with opportunities to hear from multiple voices, including opposing views.

Siting geological disposal facilities is a long-term process. Experience shows that as the site selection process advances, increasingly more community members become interested and join the ongoing dialogue without the knowledge that other community members acquired over the years. Therefore, it is important to maintain corporate knowledge and ensure that engagement programs remain consistent with the narrative and founding values and principles.

Involving Communities in Dialogues about Safety

Safety has a social dimension and citizens have a role to play in discussions about safety. Communities may have perspectives and concerns about safety that are not necessarily addressed or considered through traditional approaches to conducting safety assessments. Therefore, it is critical to involve communities early to understand their questions, concerns, and perspectives.

Although implementing organizations need to develop a safety case that would withstand the scrutiny of the regulator, potential host communities also need to build their own narrative on safety, related to why they are considering hosting a repository. It is critical for communities to build their knowledge and resiliency.

Some of lessons learned over time include:

- Communities need to have the time and the resources to learn and process the large amount of information associated with developing geological disposal facilities.
- As much as possible, communities need to be involved in joint planning, execution, and interpretation of field investigation studies to assess the technical suitability of the sites.

- Communities should be provided with opportunities to hear from multiple sources of information, including opposing voices, regulators, and range of independent experts.
- Elders and knowledge holders in local indigenous communities should be included to explore opportunities for interweaving indigenous knowledge in assessments.
- When multiple potential sites are available, potential host communities should be involved in selecting socially acceptable repository sites based on their own socioeconomic and cultural criteria.

Implementing Geological Disposal Facilities in Partnership with Local Communities

Geological disposal facilities are large infrastructure projects that are developed and operated over many decades. They offer a unique opportunity for decades of sustainable development. Organizations responsible for implementing such facilities need to engage potential communities in exploring how the project can be implemented through partnership in a manner that will enhance well-being. The added value of the project is an important component of the community narrative for hosting a geological disposal facility. Developing supportive and resilient partnerships could involve the following:⁸

- Communities having independently developed a vision of their future and assessing whether the project aligns with that vision.
- A stepwise process to engage community leaders and members in partnership discussions, including discussions on values and principles, potential community benefits and impacts, project implementations options, required local and regional partnerships, and required investments to implement the project.
- Exploring potential partnership models and opportunities for the communities to participate in implementing and managing certain components of the project as appropriate.
- A clear demonstration that the project aligns with the well-being vision the host communities have for themselves, consistent with their narrative.
- An agreement that articulates the benefits that potential host communities will receive from hosting the project (the added value) and the commitments on both sides.
- A commitment to establishing a visitor center that could become a national and international scientific hub. Such facilities can help potential host communities further support their narrative for why they are considering hosting the project.

Comprehensive National Legislative and Regulatory Framework

Successful and socially acceptable implementation of geological disposal facilities requires a clear national legislative, regulatory, and implementation framework for the long-term management of radioactive waste. Stakeholders' confidence is increased when the national regulatory framework is consistent with the approaches, guidelines, and standards adopted by international organizations such as the IAEA, NEA, the International Commission on Radiological Protection, and the European Commission.

⁸ Nuclear Waste Management Organization, NWMO (2021), "Working Together in Partnership," <https://www.nwmo.ca/en/A-Safe-Approach/About-the-Project/Working-in-Partnership>.

Governments have the primary role in developing the national framework, which should consider, at a minimum, the following components:

- (a) Clear national policies, strategies, and regulations for managing radioactive waste.
- (b) Financial surety to ensure funding is available to cover all implementation phases.
- (c) Adequate resources to support implementing the national framework.

Clear National Radioactive Waste Management Policies, Strategies, and Regulations

The radioactive waste management legislative and regulatory framework should provide clarity to all stakeholders involved, including the public. It should aim to achieve the following:

- An integrated radioactive waste management policy and implementation strategies that consider the entire nuclear fuel cycle.
- A strong, independent regulator with clear safety policies and regulations, and a transparent decision-making process that provides opportunity for the public to be heard.
- A clear implementation framework that clearly defines roles and accountabilities of various levels of governments, regulators, waste owners, and implementing organizations. Having multiple parties involved in siting geological disposal facilities and interacting with communities may lead to inconsistencies in the approach and narrative, which may erode public trust and acceptance. Dedicating an organization to be responsible for the long-term management of radioactive waste tends to increase stakeholders' confidence.
- Support at multiple levels of governments, including among opposition parties, is critical. Political divisiveness trivializes the importance of the challenges associated with the long-term management of radioactive waste and erodes public confidence in all parties involved.
- Support for research and development and commitment to international cooperation.

Financial Surety

Citizens expect that the funds necessary to pay for the long-term management of radioactive waste are available and managed responsibly. The funding sources, funding process, and financial controls should be transparent and embedded in the legislative and regulatory framework. The financial surety system should, at a minimum, include the following:

- Regularly updated cost estimates that cover covering the full life cycle of implementing the geological disposal facility.
- An independent review and audit process that ensures cost estimates are accurate and sufficient to cover implementation.
- Establishment of appropriate trust funds or financial guarantees to cover the long-term costs, including a clear process and mechanism establishing the amounts and frequency of waste owners' contributions to the funds.
- An independent oversight process to ensure funds are secure and adequately managed, including compliance with the rules and conditions governing access to the funds by implementers.

Adequate Implementation Resources

Successfully siting and implementing geological disposal facilities is a lengthy process requiring a great deal of financial and human resources. This should be accounted for early in the process because it takes

time for organizations to build their internal capacity to site and implement geological disposal facilities. Experience shows that the demand for resources increases with time as communities learn more about the project, become more involved in the engagement effort, conduct their own independent activities to learn about the safety of geological disposal and how the project will impact their environment and quality of life.

Conclusion

Geological disposal is being pursued by most countries with nuclear programs supported by robust international cooperation programs. It is widely accepted within the scientific community as the best method available today for the safe long-term management of HLW and long-lived ILW in a passive manner that does not require long-term institutional controls. However, international consensus among experts is not widely reflected in the public and confidence varies significantly. One of the most important lessons learned is that stakeholder involvement and public confidence are key to success. Although any technical option must be based on sound science, it should also reflect citizens' perspective on safety.

Building and sustaining public confidence is a challenge. It is influenced by constantly evolving economic, social, and political landscapes that are specific to each country, as well as advances in science and technology. Although no universal template for the right approach exists, common themes and approaches can be used to assemble the building blocks for public confidence and acceptance. These include:

- A compelling case and narrative for geological disposal.
- A flexible, phased, and adaptable participatory approach grounded in mutual trust and respect, with a clear and transparent decision-making process.
- A comprehensive national legislative and regulatory framework, including political will and commitment.

The compelling narrative for disposal is best developed and validated with early participation of key stakeholders to ensure that it reflects their common values, principles, and expectations. Developing the narrative requires involving stakeholders in understanding and acknowledging the nature of the hazard associated with HLW and long-lived ILW and the limitations of interim storage; identifying those who need to be involved and understanding how they want to be involved; and agreeing on the technical and social criteria that should be used to assess waste management alternatives.

Public confidence and acceptance require a dialogue-driven implementation approach where key stakeholders and citizens are involved from the very beginning. This requires a flexible and adaptable management approach that includes a clear decision-making process. Key components of this approach include a socially acceptable fair and inclusive siting process; a comprehensive community engagement program to build awareness and, ultimately, acceptance; a commitment to engage in a two-way dialogue with citizens; and a willingness to partner with potential host communities.

Successful and socially acceptable implementation of geological disposal facilities requires a comprehensive national legislative and regulatory framework. International experience suggests the framework should include clear national policies, strategies, and regulations for managing radioactive

waste; financial surety to ensure funding is available to cover all phases of implementation; and adequate resources to support implementation.

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Appendix A: List of Contributors

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From: Pat Bulla
Sent: Friday, February 25, 2022 11:37 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Pat Bulla

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From: Jacopo Buongiorno
Sent: Sunday, December 5, 2021 9:34 AM
To: Consent Based Siting; Huff, Kathryn
CC: Jacopo Buongiorno
Subject: [EXTERNAL] Federal interim storage facility

Dear Katy,

Here I share a few thoughts about the subject matter: [DOE Restarts Consent-Based Siting Program for Spent Nuclear Fuel, Requests Input on Interim Storage Process | Department of Energy](#)

Recognizing that Yucca Mnt is not going to happen, and TX and NM are unlikely to accept an interim dry cask facility, is it an option to consolidate all dry casks at a single operating Nuclear Power Plant (NPP) site which is committed to nuclear energy for at least another 60 yrs? For example, the **Vogtle site in Georgia**. Dry casks are already present onsite, a well-trained nuclear workforce is available, and the locals are nuclear friendly. The site has ocean access via the Savannah River, which should make dry-cask transportation feasible by water from every other NPP site in the US because it eliminates the need for land transportation through counties and towns. The Savannah River National Laboratory is right across the river and can provide technical support for the storage facility.

The program would include a **commitment to re-evaluate the various disposal options every 20 yrs**, and then either proceed with permanent disposal or prolong interim storage. The cost of dry cask management is well within the noise of daily fluctuations of electricity sale revenue at the US NPPs, so from an economic point of view this solution is quite affordable.

For such a centralized dry cask facility we need a volunteer site and so far no volunteers... I anticipate DOE-NE's current initiative will also come up empty handed: I'd love to be proven wrong of course!!

To be successful, an interim storage facility cannot be perceived as a dump. Rather it should be set up as a **"Nuclear Technology Hub"** and a **"National Nuclear Fuel Reserve"** site. The Nuclear Technology Hub could include a dry-cask fabrication facility or an advanced TRISO fuel fabrication factory or a microreactor fabrication factory. The National Nuclear Fuel Reserve would store 10-years worth of HALEU yellow cake, as a hedge against international uranium market disruptions.

Finally the **PR campaign** has to be credible. Here is a thought: a few executives of this new venture should move to the Vogtle area with their families to demonstrate confidence in the safety of the facility. Also, all NEI member companies should become investors in that new business, proportionally to the amount of HLW they contribute to the storage facility.

I hope you may find this input of some value as you tackle what is one of the most essential challenges for nuclear energy.

Cheers.
Jacopo

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From: Hannah Burling
Sent: Thursday, March 3, 2022 8:44 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage LWVNM
Attachments: LWVNM Answers to CISF Questions.pdf

March 3, 2022
From: League of Women Voters of New Mexico
To whom it may concern:

SE NM and west TX include sites with private industry proposing two consolidated interim storage facilities for spent nuclear fuel – these two facilities are currently undergoing license approval by the US NRC. This has prompted the LWVNM to become better educated and carefully consider the impacts of this venture on the residents and environment with particular awareness of the void resulting from lack of federal operation and management structure which would employ safety measures and safeguards inherent during federal or utility operation of similar facilities.

LWVNM concluded a four-year study of spent nuclear fuel storage safety involving both technical professionals including nuclear and chemical engineers, physicists, chemical engineers, geologists and hydrogeologists, nuclear chemists and professionals from numerous other disciplines to develop a position applicable to advocacy efforts. The LWVNM Spent Nuclear Fuel Storage Safety Position was formulated April 2021 following consensus meetings including members in four local leagues.

LWVNM addressed each question included in the three areas of inquiry: Area 1: Consent-Based Siting Process, Area 2: Removing Barriers to Meaningful Participation, and Area 3: Interim Storage as Part of a Waste Management System. These answers are in the attached PDF file.

Please consider the attached LWVNM response and direct any requests for clarification or additional information to Hannah Burling, LWVNM President, at [REDACTED] or [REDACTED]. Thank you for this opportunity to provide a meaningful evaluation of our nation's responsibility for spent nuclear fuel storage.

Sincerely,

Hannah Burling



Hannah Burling
President

[REDACTED]



CISF Siting Questions

LWVNM SNF Storage Safety Committee Deliberation February 2022

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

- Spent Fuel safety and environmental documents should be made available in public libraries with translated copies.
- Improve transparency by wide dissemination of information including materials designed for a general audience.
- Many residents, especially in rural areas, may not have internet access readily available or may not be comfortable with technology. Provide in person meetings with translators attending or landline telephone access as an alternative with advance publicity by distribution of flyers or pamphlets.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

- The NIMBY (not in my backyard) attitude is prevalent along with the donut effect of local acceptance with a larger community of residents perceiving risks as greater than the benefits to the broader region. Elected officials representing residents in impacted areas should be involved at early stages to offer recommendations and confirm acceptance by constituents.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

- The public has the right to know the potentially harmful effects of materials they encounter in the workplace and community. Residents must be included in the planning and decision-making processes for SNF and GTCC material management decisions. Adequate funding to promote public participation should be available and all options, including in-person and virtual means, for participation during public comment periods must be made available to all residents. Local communities of all sizes, including sovereign nations, must be involved to the greatest extent possible
- Transparency is important. Ensure that any privately owned/operated SNF/GTCC storage facility, if approved, operates in accordance with all safety controls required for licensing of government-owned or utility-owned SNF storage facilities;
- Ensure that current Aging Management Programs (AMPs) are imposed at all SNF and GTCC storage facilities. The AMPs must be monitored and upgraded as new research results become available and new technologies are developed to minimize radiation exposure and to extend storage for a longer period if needed.
- Require that SNF storage facility owner/operators adequately characterize the subsurface geology and hydrology of a proposed site using modern techniques to ensure that no potential hazards are present and to ensure that no hydraulic fracturing or wastewater

disposal wells are located close to the site. Require the evaluation of the impact on local archaeological and cultural sites and consultation with state agencies.

- Ensure that any private contracting of SNF/GTCC transportation complies with both NRC/Department of Transportation/Agreement State requirements and with the same state and tribal notification requirements as for government transportation. (US NRC indicates all planned transport will be via rail controlled by US DOT/Federal Railroad Administration)
- Ensure that financial and liability responsibilities for transporting the waste, funding necessary upgrades to rail lines and roads used for SNF transport, and cleanup in case of an accident are assigned to the federal government, not to affected states prior to license approval for interim storage facilities.
- Ensure that the federal government is responsible for costs associated with emergency responders in case of accidents during shipping.
- Ensure that requirements for repackaging SNF/GTCC prior to acceptance at a proposed SNF storage facility will be sufficient to resist fuel degradation and cask corrosion or deterioration so integrity of casks is maintained throughout the storage period. Require contingency plans for maintaining cask integrity at interim sites.
- Ensure that NRC evaluation of the licensing documents for a SNF/GTCC storage facility adequately covers all risk factors prior to approval. Ensure that the 2020 NRC rulemaking for GTCC storage provides adequate protection of the public and the environment until a permanent U.S. solution for SNF/GTCC disposal is approved.
- Require a private applicant for a storage facility license to establish a liability trust fund, analogous to the decommissioning fund, as a financial assurance to the community in case of an accident. Alternatively, require a private owner/operator of a nuclear waste storage facility to have a letter of indemnification from a bank or other financial institution to pay for costs incurred in the event of an accident at the site, a leak of radioactive materials, and clean-up of the site after abandonment. Such indemnification should cover individuals and/or communities for economic damages caused by involuntary exposure to radioactive materials.
- Require that financial resources be available to comply with safety regulations or that the storage facilities be indemnified by federal government extension of the Price Anderson Nuclear Industries Indemnification Act to ensure continued worker and public safety and protection of the environment.
- Require compensation to the local community and to the state for normal operations. Funding committed to communities should be defined prior to approval and transparency measures should permit states to determine whether these financial assurances are adequate. The compensation should be commensurate with the risk of having a SNF/GTCC waste storage facility for sixty or seventy years as tourism and development may be impacted significantly, requiring more incentives than the limited employment that these facilities will contribute to the economy.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

- Opinions representing special interests and NIMBY attitudes impede the process.
- Adverse consequences may result if marginalized groups are not actively encouraged to engage in the process to voice their opinions and express concerns. Dissenting opinions should also be encouraged during the licensing and construction process.
- Failure to address items discussed in question 3 above.
- Failure to engage marginalized communities in the process.
- Lack of transparency

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

- The Federal government should involve local community residents and elected officials with briefings during the pre-proposal period and provide assurance that any concerns raised during the pre-characterization phase could result in reconsideration of the proposed site. Unanticipated risks identified during subsequent site characterization could also prevent further consideration of the site.
- Lack of continuity from one state administration to the next has resulted in position reversals regarding the siting of a CISF – establishment of a bipartisan commission could prevent reduce future impasse.
- The federal government's track record of sharing information is poor and the federal government hasn't previously been straight forward, resulting in a lack of trust.
- **Make transparency a priority.**

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

- Elected and appointed officials including the State Land Commissioner, NM Environment Department Secretary, Energy, Minerals and Natural Resources Secretary, city councils, and county commissions.
- emergency management/first responders, ranchers, agricultural community, indigenous communities should all be consulted.
- **Non-profit organizations could offer advice which may optimize collaboration.**

7. **What other issues, including those raised in the *Draft Consent-Based Siting Process* ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?**

- Alternative land use considerations which may offer more potential advantages to the community should be considered with adequate compensation for loss of this resource for community applications
- Involvement of individual parties (#6, above) could avoid the endless civil litigation and ongoing social friction

Area 2: Removing Barriers to Meaningful Participation

1. **What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?**

- Barriers: Language barriers, insufficient education on the issues (residents not voicing their opinions due to lack of confidence), internet access or lack of familiarity with technology, meeting times (most residents work during regular business hours), special interest group motivations, widespread misinformation
- Suggested Mitigation: Promoting 3rd party academic experts/educational institutions, including those who can speak to a general audience, as advisors and spokespersons

2. **What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?**

- In NM involvement of a panel of experts representing natural gas and agricultural interests, scientists, social scientists and the legal community could vet issues and employ civil discourse. It is important to be prepared to address a general audience
- Outreach to minority and underrepresented communities to elicit their opinions

3. **How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?**

- In NM a collaborative study and subsequent evaluation by technical experts representing 3 universities: UNM, NMSU, and NM Tech could address communities of interest. Disciplines could include petroleum engineering, nuclear engineering, geology, agricultural experts, and social scientists.

4. **How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?**

- Creation of permanent jobs for the duration of Spent Nuclear Fuel storage period rather than limited construction phase employment opportunities. Co-location with other facilities could minimize supplemental infrastructure required.
- DOE could initiate conversations with underrepresented communities

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

- Reliable 3rd party advisors from NM universities to evaluate the safety and environmental impacts offering easily digestible information with recording of feedback by unbiased in-state experts and subsequent translation to reach marginalized communities
- Impact analysis performed by community experts involved with both the creation and receiving feedback

68245

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

- Site selection, exploration, and characterization should be unbiased and not targeted toward marginalized communities. Affluent white communities frequently mount extensive opposition.
- Explain that some geologies are more conducive to spent fuel storage and meteorology is a strong consideration.
- Employ protocol to ensure adequate compensation for residents that is risk-based, disbursed equitably, and invested with dedication to marginalized communities if impacted by significant risk of site selection
- Consideration of competing resources (oil & gas exploration and development) which may be a financial priority
- The Department can actively conduct outreach and present information in a forthright manner.

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

Benefits

- Creation of high-paying permanent positions involving the scientific research opportunities, construction and site operations personnel would concentrate expertise among residents
- Extraction and manufacturing facilities including natural gas/fracking may also offer an interested, receptive community
- Offering large scale infrastructure projects to the host community

Drawbacks

- Risk from existing facilities would be increased by co-located spent fuel storage; risk could be balanced by economic incentives to increase community acceptance
- Marginalized groups may be unable to defend their interests

3.To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

- A permanent repository must be identified following an earnest and concentrated effort to determine **siting**. This would be a very large-scale infrastructure project involving complex study with scientific resources for the characterization, development, and construction effort exceeding 40 years.
- Failure to open the Yucca Mountain repository in NV was completely short-sighted and now has resulted in subsequent requirement to rebuild lost infrastructure

4.What other issues should the Department consider in developing a waste management system?

- Cynicism concerning nuclear industry activities is prominent in western civilizations and limits prospects – a long-term, concerted effort will now be required to restore faith
- Reprocessing could minimize radioactive waste volume and should be reconsidered for co-location with spent fuel storage facilities
- Development of fast reactor technology with domestic implementation could be encouraged to consume Spent Nuclear Fuel and reduce volume for storage and subsequent disposal.
- More scientific studies and data from Aging Management studies are necessary to evaluate long-term storage characteristics of spent fuel
- Compensation for the technical expertise required will be a significant economic consideration
- NIMBY (not in my backyard) is prevalent in privileged, higher income communities

From: Elizabeth Butler
Sent: Friday, February 25, 2022 9:21 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Elizabeth Butler



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From: James Butler
Sent: Friday, March 4, 2022 6:32 AM
To: Consent Based Siting
CC: Rob Brule (Waterford First Selectman); Fred Allyn III [REDACTED]; Grant, Ayanti; Amanda Kennedy
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: SCCOG Statement to DOE re Consent Based Process JSB.pdf

Please find attached the response of the Southeastern Connecticut Council of Governments to the Department of Energy's Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities.

Thank you.

James S. Butler, AICP
Executive Director
Southeastern CT Council of Governments
[REDACTED]

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SOUTHEASTERN CONNECTICUT COUNCIL OF GOVERNMENTS

5 Connecticut Avenue, Norwich, Connecticut 06360
(860) 889-2324/Fax: (860) 889-1222/Email: office@seccog.org

STATEMENT OF SOUTHEASTERN CONNECTICUT COUNCIL OF GOVERNMENTS

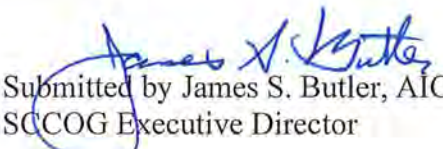
**In Response to USDOE Request for Information
on Use of Consent-Based Siting Process for Spent Nuclear Fuel
3 March 2022**

The Southeastern Connecticut Council of Governments (SCCOG), representing 22 member municipalities, wishes to go on record in support of the position on this subject submitted to the Department of Energy by SCCOG member Town of Waterford First Selectman Rob Brule (see attached). The Town of Waterford has hosted the Millstone Nuclear Power Station for more than 50 years, and as such has been the location of what was originally intended to be the short-term storage of spent nuclear fuel in the form of Horizontal Storage Modules (HSMs).

The use of a consent-based siting process to establish interim storage sites, and hopefully an eventual final disposal site, will allow the relocation of spent nuclear fuel from reactor sites like Millstone, enabling property at nuclear reactor plants to be more efficiently be utilized toward the generation and provision of this clean energy source. The use of such a process will also allow for a well-planned and considered system of interim sites, which have been vetted by the host communities, and for which serious consideration of social equity and environmental justice issues has been made.

The SCCOG furthermore agrees with and wishes to endorse recommendations made by its member Waterford, especially its position that under the proposed process, communities be provided a final right of refusal as to where these interim storage sites are located if on non-Federal land. The SCCOG also concurs with Waterford's concern that a permanent location for the nation's spent nuclear fuel could be further delayed due to issues similar to those encountered at Yucca Mountain, and therefore the selected and community-approved interim sites should be conceived and constructed for the long-term.

Thank you for this opportunity to comment.


Submitted by James S. Butler, AICP
SCCOG Executive Director

Attachment

Member Municipalities:

Bozrah * Colchester * East Lyme * Franklin * Griswold * Borough of Jewett City * City of Groton * Town of Groton * Lebanon * Ledyard * Lisbon * Montville * New London * North Stonington * Norwich * Preston * Salem * Sprague * Stonington * Stonington Borough * Waterford * Windham

*If language assistance is needed, please contact SCCOG at 860-889-2324, office@seccog.org
Si necesita asistencia lingüística, por favor comuníquese a 860-889-2324, office@seccog.org.
如果您需要语言帮助, 请致电 860-889-2324 或发送电子邮件至 office@seccog.org.*

FIFTEEN ROPE FERRY ROAD
WATERFORD, CT 06385-2886



PHONE: 860-442-0553
www.waterfordct.org

March 3, 2022

U.S. Representative Joe Courtney
55 Main Street, Suite 250
Norwich, CT 06360

RE: U.S. Department of Energy to develop and implement a consent-based siting process and to identify a process to move spent nuclear waste to interim storage sites.

Dear Congressman Courtney,

Waterford commends the U.S. Department of Energy for exploring a consent-based process to address long-term siting issues for nuclear fuel storage. The scale and longevity of impacts associated with nuclear activity demand an equitable partnership between host communities and Federal agencies. At its core, a successful consent-based siting program should provide current and potential nuclear host communities with meaningful opportunities to comment on, and final authority to approve or deny any prospective facility in their jurisdictions.

As the host community for Millstone Nuclear Station since 1970, Waterford is specially positioned to comment on both the proposed consent-based process and community issues arising from the lack of a permanent Federal disposal site. Waterford is proud to support safe, long-term, carbon neutral energy production in Southeastern Connecticut. In partnership with the Southeastern Connecticut Council of Governments (SCCOG), and at the request of Congressman Joe Courtney, Waterford is pleased to provide comments on the Department of Energy's Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities.

Waterford recognizes the need to address interim storage options, and favors a consent-based approach. The Town previously participated in CT Siting Council reviews to permit Horizontal Storage Modules (HSMs) at Millstone in support of ongoing plant operations. Enabling on-site storage was a necessary but temporary step in the absence of a permanent Federal disposal site. Moving HSMs from Millstone to a Federal site would enable productive reuse of property at Millstone to further invest in infrastructure for carbon-neutral energy projects. Millstone is a critical component of State and regional power supply, and is Connecticut's best option to achieve its carbon-neutral energy goals by 2040. Enabling materials to be removed from Waterford will provide additional capacity to support clean energy operations proximal to existing infrastructure.

Waterford further advocates for the following:

1. Removal of existing and future spent fuel from the Millstone Nuclear Station.
2. Provision of adequate security at all stages of storage and transportation, and sufficient funding to address site-specific and route-specific security needs.

3. Dissemination across multiple communication platforms of public information concerning safety protocols for the transport of any spent nuclear fuel from the Millstone site.
4. Continued support for the research and development of best practices and next generation storage of spent nuclear fuel.
5. Provision of impact funds for local emergency management operations throughout the duration of interim storage and until transfer of spent nuclear fuel at Millstone to a Federal temporary or permanent disposal location.

As the consent-based process is refined, Waterford urges consideration of a few key elements. First and foremost, communities should have final and binding opportunity to refuse siting facilities on any non-Federal land within their jurisdiction. Waterford will continue to support the safe storage of materials generated at Millstone for as long as it is necessary to maintain plant operations. Waterford would not consider accepting materials from other locations and would oppose identification of Millstone as a storage location under the new program. Second, selection of interim facility sites should take into account potential future delays in a permanent, central facility. Interim sites should be capable of operating on a semi-permanent basis and should be sized to anticipate capacity needs under current power generation conditions as well as the potential for operational expansion or emerging technologies. Finally, opportunities to co-locate interim storage where materials could be used to support research and development for next-generation nuclear operations should be considered.

Waterford also recommends that communities be afforded opportunities to participate in refining program parameters beyond the March 4th deadline. While local officials were able to meet subsequent to the January 24th request for comment, the timeframe allocated did not allow for meaningful public participation or community comments. As expressed in the DOE's Request for Information, issues of equity factor significantly into the composition of a final process. Ensuring adequate outreach and opportunity for community feedback should be a priority. Thank you for the opportunity to comment. Waterford looks forward to learning more as the Federal program is crafted and welcomes continued conversation on the matter.

Sincerely,

Robert Brule

Rob Brule
First Selectman
Town of Waterford

From: [REDACTED]
Sent: Friday, December 17, 2021 9:43 AM
To: Consent Based Siting
Subject: [EXTERNAL] Response to Consent-Based Siting RFI

Dear Dr. Huff and colleagues.

This link will take you to comments we made during the 2016 Consent-Based Siting effort (<http://www.windhamregional.org/images/docs/vy/WRC-Comments-on-Consent-Based-Siting.pdf>). I believe they are still timely and relevant. In addition to seeking new comments, I hope you will also make use of information gathered during the prior effort. The Windham Region is host to the Vermont Yankee Nuclear Power Station, and we have emerged as a leader in preparing for plant closure and decommissioning, and thinking about the process.

Please let me know if you have any questions.

Chris Campany, Executive Director
Windham Regional Commission

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
www.windhamregional.org

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From: Bruce Campbell
Sent: Friday, March 4, 2022 1:58 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-based Siting and Federal Interim Storage

Submitted by:
Bruce Campbell

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

To whom it may concern at the Dept of Energy and beyond:

It is clear that the U.S. Department of Energy has no authority to do anything but to “research” so-called Consolidated Interim Storage facilities – plus any such research should be in conjunction with the identification, and then opening, of a Permanent Geologic Repository as stipulated by the operating law of the land. That operating law of the land is the Nuclear Waste Policy Act, as amended in 1987. It should be noted that the NWPA prohibits federally-recognized Consolidated Interim Storage facilities.

Seeing that many premises on which the entire document and program are based are clearly not legally authorized, then it makes sense for the entire document to be withdrawn. But if the document is not withdrawn due to DOE realization that their & NRC’s CIS program is treading in unauthorized territory, and the agency decides to “double-down” and declare “consent-based siting” to be an essential PRINCIPLE for seeking locations in which to site CIS facilities, then it is apparent that the proposed ISP and Holtec CIS sites are two clear examples where governors of both states, the TX Legislature who prohibited all CIS borders not only at the proposed west Texas site but anywhere in the state, TX County Commissioners, plus local bodies have opposed these radwaste dumping schemes. Thus the two CIS sites being pushed by the respective monopolistic companies must be scrapped.

Next I wish to correct two little items in the group letter submitted regarding this matter. It’s possible these two typos were corrected before submission, but in the main earlier version I noted these:

1. in 2nd paragraph of page 4 of the group letter, there was such an emphasis on the shortcomings of the proposed / approved CIS facilities that there were two negatives used inadvertently in the sentence “Waste could remain in facilities that are not environmentally unqualified” Clearly, the intent is either to say, “Waste could remain in facilities that are not environmentally-qualified” or to say “Waste could remain in facilities that environmentally-unqualified”. The rest of the sentence is crucial to comprehend as well. Choosing my first proposed alternative just above and then completing the sentence in that group letter: “Waste could remain in facilities that are not environmentally-qualified to secure it for indefinite periods of time that would result from failure to open a permanent repository.”

2. on page 5 of the group letter in the 2nd full paragraph, the spelling error that leapt out at me must not distract from the importance of the meaning of the sentence itself. There is a question in regards to how much DOE is dedicated to the principle of “Consent-based Siting”. At least an earlier version of the group letter spelled it “principal” rather than “principle”. So to quote this whole sentence while correcting the spelling, it should read: “DOE must state whether it is truly committed to consent-based siting as a principle, and whether it should entertain contracting with ISP and/or Holtec without local consent for the operation of their respective facilities.”

So, in review, DOE does not have authority to authorize CIS facilities – only to research such upon the opening of a permanent geologic repository. I have concerns that “consent-based siting” seems designed to “soften up” often vulnerable Environmental Justice communities (*including tribal communities*) to becoming a dumping ground for radwaste. There clearly is some pressure to open up CIS facilities (*likely led by the two monopolistic-tentacled companies who want to operate the New Mexico and Texas proposed CIS facilities*) without giving much thought to the law, the companies, the canisters, or even abiding by your possible principle that DOE is an advocate of “consent-based siting”.

The group letter on this CIS proposed matter emphasizes the many-tentacled ISP and their related companies who want to operate one CIS, but I will note that Holtec is getting into numerous aspects of the nuclear industry in a monopolistic way increasingly since now Camden, NJ-based Holtec merged with a Canadian company convicted of bribery.

I wonder if the real push is for what would currently be for lucrative contracts (illegal unless some statutes are changed) with ISP and with Holtec.

So while I question so-called “consolidated interim storage” sites because they are highly likely to become permanent (and thus a misnomer designed by nuclear strategists), such sites should also be opposed for three primary reasons: 1. The shady monopolistic practices of the companies vying to operate CIS facilities to which to haul the radwaste at old nuclear power station sites which they have acquired (as well as accepting other radwaste); 2. It is far too soon to move the spent fuel rod assemblies waste – even if there was a decent site to which to take it. Some believe that 35 to 85 years of cooling would be needed in order to make that very hot radwaste less troublesome; and then 3. The little fact that the nuclear power industry promised the public “thick casks” / “dry casks”, and instead we got THIN HOLTEC CANISTERS ! I was at the Community Engagement Panel hearing in southern Orange County in the mid-2010s when Holtec executive Dr. Krishna Singh of Holtec admitted that his companies containers “cannot be inspected, repackaged, or transported”. And Holtec generally wants to run a facility mostly accepting Holtec canisters even though they should never be transported more than perhaps several dozen yards EXTREMELY carefully.

I imagine the aforementioned companies are pursuing “settlement agreements” with federal entities in order to get the federal taxpayer on the hook for liability related to the radwaste as well as formal “ownership”. While I oppose such agreements, I would insist that if any do move forward that they assure that only radioactive waste containers designed to be transported (the casks) will be allowed to be transported away from commercial nuclear power sites to a so-called CIS site or otherwise. Get serious about saving spent fuel pool buildings within which possible very careful repackaging may take place – despite Dr. Singh insisting that Holtec canisters cannot be repackaged.

Thank you for consideration of these comments. Not only is the radioactive cart coming before the horse (as it were), but there will be a major public health threat if there is to be any transport, let alone transport of spent fuel rod assemblies from high burn-up fuel in inferior thin canisters (a clear bait-and-switch because the public was clearly promised thick “dry casks”) such as those that the NRC foists on utilities produced by Holtec.

Sincerely yours,

Bruce Campbell

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From: Rebecca Canright
Sent: Wednesday, December 1, 2021 2:06 PM
To: Consent Based Siting
Subject: [EXTERNAL] respectful constituent comment

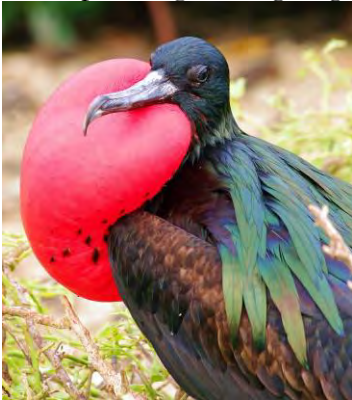
Greetings!

I am a young person who cares about investing in renewable energy. Solar and wind energy create thousands of jobs in the energy sector, achieve energy independence and keep our air and water clean. I respectfully ask you to safeguard our ecosystems by disposing of nuclear waste in the most environmentally-safe way possible. And let's move more towards supporting renewable energy.

Thank you for your time and consideration! Happy Holidays!
Take good care,
Rebecca

--

Frigate birds fly for months over the ocean and can engage in both regular sleep and use half their brain at a time to sleep during soaring or gliding flight.



Compassion for all creatures great and small.

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From: Patricia Cardona
Sent: Friday, March 4, 2022 7:36 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI Consent Based Siting Office of Spent Fuel and Waste Disposition
Attachments: Version 2.1 Consent and Permanent Repository.pdf

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**To: Office of Spent Fuel and Waste Disposition, Office of Nuclear Energy,
Department of Energy**

Re: RFI Consent Based Siting

The Department of Energy needs to include in its repository siting criteria (10 CFR 960) consent, social equity or environmental justice. Repository siting and interim storage criteria should be revised to include social equity, environmental justice and consent as part of an integrated nuclear waste management system.

Social equity necessitates that areas that benefit from producing radioactive waste, especially spent fuel and high-level waste should have a proportionate obligation to store the waste they created. These areas should not be exempted from locating a permanent repository within their state or region. Areas hosting repositories should also be provided with support to create a repository that has state of the art technology and engineering for safe storage of high-level waste.

This RFI does not define how DOE or the Nuclear Regulatory Commission (NRC) will function under the Nuclear Waste Policy Act and the Consolidated Appropriations Act of 2021 as related to “interim spent fuel storage”. This relationship needs to be clearly defined especially as related to safety as well as site selection. Consent-based siting is extremely important, and we offer here some general comments and proposed definitions regarding consent. Consent is applicable to siting of permanent repositories and must be defined as a free, prior, informed, willing, and broad-based agreement to host a deep geological nuclear waste repository in perpetuity. Areas hosting nearby reactors are de-facto “interim storage sites,” and their consent to continue as hosts is assumed, certainly as long as the plant is operating and some years afterwards when on-site storage is possible. We also agree with those in reactor communities that support improved cask technology until such time as the waste can be removed to a deep geologic repository.

There are three general categories of communities within states that exist in relation to nuclear waste storage are:

- 1.Communities with reactors which have benefitted from creating commercial nuclear spent fuel waste and are storing spent fuel and high-level commercial waste.**
- 2.Communities with no reactors and no nuclear waste storage, (a) with or (b) without areas with heavy pollution from other industrial activity.**
- 3.Communities mostly rural with no reactors but which are already hosting nuclear waste storage due to prior economic development from the nuclear industry, including abandoned uranium mines, millings, nuclear testing sites, and storage of military waste.**

The policy of exempting states producing high-level waste from consideration for a permanent repository is shamefully unfair and results in social inequity and environmental justice abuses. Spent fuel rods without casks give off enough radiation to kill people in a matter of seconds. There are more than 30 million such rods in U.S. spent fuel pools. This waste needs to be placed in secure dry cask storage until it can be moved to a deep geological repository.

High-level nuclear waste is an economic, social and health liability. It hampers economic resiliency for the one million years of isolation required. None of the 38 states benefitting from making high-level waste are currently consenting to host a permanent repository.

DOE's existing siting criteria are based upon an unjust preference for transferring spent fuel and high-level waste liabilities to rural areas. Rural economies use open land for a diversity of economic and social activity ranging from residential to industrial, agricultural, ranching, recreational, cultural and conservation and some are already storing nuclear waste. The intrusion of spent fuel and high-level waste into an economy displaces economic growth and resiliency.

Therefore, criteria for siting a repository should include areas around reactor sites already storing spent fuel and high-level waste on an "interim" basis. The areas around these sites are de-facto places already providing "interim storage sites" and are in a position to facilitate establishing permanent repositories without long transport risks from barges, trucks or rail.

The NRC in their EIS for the HOLTEC storage site have constantly stated that there are "minimal impacts" and "statistically insignificant" dangers from the storage of high-level waste. Therefore, it is logical that repositories can be constructed in regions where the high-level waste currently exists.

However, areas hosting repositories should also be provided the financial support to provide:

- 1. The various emergency systems like fire stations, medical response, and specialized safety equipment for accidental radioactive releases and evacuation.**
- 2. Continual monitoring from a local "Stakeholder Safety Committee" to ensure that safety is not compromised either in equipment purchase, use or operating procedures.**
- 3. Adequate funding for building a repository with "state of the art" repository engineering, cask design (that can be monitored and repaired) as well as ensuring the manufacturing process for casks meets design specifications for materials.**
- 4. Providing cooling pools and cask repair facilities.**

One of the issues for some of the decommissioned sites is that there are questionable safety standards for storage facilities and cask design allowed by the Nuclear Regulatory Commission. The advantage of establishing a site near areas already storing the spent fuel rods and high-level waste is that it minimizes the risk to the country from long range transport by barge, truck and/or rail.

Recommendation 1: There needs to be a rule-making that defines consent, social equity, and environmental justice.

Consent needs to start with the idea that it is free, prior, and informed and is a mutual contract to use the land and water at a specific location for a specified time frame.

The suggestion of “Incentives” as described in some proposed federal legislation is perceived by some as bribes that are needed because a project cannot stand on its own as safe and economically advantageous for an area on a long-term basis. Offering bribes to local officials, technical experts, tribes, local political subdivisions, agencies or organizations to persuade them to accept projects that may be economically disadvantageous while hiding or downplaying safety risks is unacceptable. Companies or individuals engaging in this activity should be disqualified from participating in a committee and from any business transactions relating to a repository or storage facility..

Recommendation 2: A neutral (with no financial interest in the construction, design, purchase of supplies or equipment for the repository), geographically and socially relevant “Public Interest” Stakeholder Repository Committee should be established when considering locating a repository. Financial support for the time and participation for the Stakeholder Repository Committee members should be provided.

The stakeholder committee should reflect the demographic make-up of the area. The Stakeholder Repository Committee should receive information from Federal, State, Tribal, local, private non-profits, environmental organizations, citizens, universities and businesses when an appropriate geological area has been identified for siting a permanent repository.

Recommendation 3: The goal of the “Public Interest” Stakeholder Repository Committee is to identify the best standards in safety, engineering, technology, and security for establishing a deep geologic repository. Funding for neutral technical experts should be provided to the Stakeholder Committee to evaluate economic, environmental, and social impacts from implementation.

Recommendation 4: An Environmental Impact Statement should include social equity and environmental justice information as examples:

1. A full assessment of all the contamination and pollution factors in the area of the proposed site.
2. A total economic assessment of the jobs, business and revenue generated in the area and its relation to the total economy of the state.
3. A total demographic assessment of the racial makeup of the site proposed as well as the state along with an assessment of their historical experiences with the nuclear industry and industrial pollution.
4. A comparison of U.S. demographics and the demographics near a proposed site should be in the EIS. Significant differences in demographics between national averages and the site or state should require withdrawal of the site from consideration as either an interim storage facility or a deep geological repository.

Recommendation 5: A state already burdened with multiple economic, health and social impacts from current industrial pollution and multiple nuclear projects like nuclear waste storage sites, abandoned uranium mines and nuclear legacy waste testing should be withdrawn from siting consideration for repositories as a matter of social equity and environmental justice.

The DOE RFI assumes a need for constructing “interim” storage sites that does not exist. There are already “interim” storage sites at the reactor sites. Commercial spent fuel and high-level waste are currently stored safely at reactor sites which are the “interim” storage sites. There is no need to duplicate more interim storage sites. There is a need to replace the current cask technology at many reactor sites to withstand extreme weather conditions like those at Fukushima and to provide safety features like cooling pools, hot cells for repairing damaged containers, and facilities for encasing the fuel rods in casks to ensure that the current “nuclear waste management system” is safe.

The DOE RFI creates pressure to withhold information in order to find a group or an area that can be “tricked” or bribed into agreeing to host an unnecessary storage facility. There are more than 30 million such rods in U.S. spent fuel pools. We need to concentrate on getting a nuclear waste management system that creates state of the art cask technology based on science to be able to directly transfer encased rods into a permanent repository. There is no benefit for duplicating existing “interim storage” functions and this would create additional economic liabilities for most areas except those areas already hosting the waste.

The re-designation of land for high-level nuclear waste storage severely restricts the use of land and disables the ability of an area to be economically resilient. The placement of a facility risks disrupting a diversity of jobs and business, especially food systems that are dependent on being “organic” and free of contamination. This re-designation of land also risks severely and irreversibly disrupting the tourism and recreation industries as well as traditional industries like farming, ranching and resource extraction.

Recommendation 6: A financial infrastructure will be required for the life of the interim facility to make up for lost jobs, business and tax revenues in an area. All businesses subject to displacement need to be reimbursed for losses. To date there are inadequate Environmental Assessments by regulatory agencies on social equity and environmental justice impacts as to the racial and economic impacts of removing jobs and businesses from an area.

Recommendation 7: A defined lifespan and function for “new” interim facilities – if indeed they need to be constructed at all -- needs to be an integral part of any nuclear waste management system. There should be a permanent repository built before building any “new” interim facilities.

Recommendation 8: Funding for cleanup should be included in any waste management system for nuclear facilities.

Recommendation 9: The consent contract must require providing full disclosure of cumulative risks from above normal radiation being transferred into a proposed licensed facility, along with financial infrastructure, engineering and cask technology, and safety standards that will be used for storing the waste. Independent experts, selected by a broad and inclusive spectrum of stakeholders, and with no ties to the nuclear industry or NRC need to be hired to certify that the technical and financial infrastructure is in place.

Recommendation 10: Consent requires full public hearings with full disclosure on the economic and health risks in languages relevant to the residents of the state involved. If people at the hearings oppose the proposed siting, then DOE or NRC should withdraw from establishing a new interim site. If consent is granted, then rulemaking must require establishing a neutral Stakeholder Committee with funding for experts to be sure Safety is not compromised.

Southwest Alliance for a Safe Future (SAFE) respectfully submits its comments for DOE’s RFI Consent Based Siting.

Sincerely,

Patricia Cardona, for Southwest Alliance for a Safe Future (SAFE)

From: Rob Carter
Sent: Friday, February 25, 2022 2:05 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Rob Carter



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From: David Chandler
Sent: Sunday, February 6, 2022 3:00 PM
To: Consent Based Siting; Beyond Nuclear
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

[REDACTED]

High-level radioactive waste contains dangerous transuranium isotopes, notably plutonium-239, which on the one hand decay very slowly, requiring that they be safely sequestered for several million years, while on the other hand are far more radioactive than uranium itself. Furthermore, as uranium occurs naturally, I believe there are effective ways to reverse a case of uranium poisoning, but as far as I know, similarly effective cures for transuranium poisoning do not exist.

Indefinitely long, to permanent, surface storage at federal CISFs would require active features. Loss of institutional control anytime over the next million years would mean the potential for catastrophic releases of hazardous radioactivity into the environment, which would harm people and other living things downwind, downstream, up the food chain, and down the generations, potentially out to great distances, depending on wind and water driven flow over long periods of time.

The lead strategy for dealing with high-level radioactive waste should be to stop producing it.

David B. Chandler, Ph.D.

[REDACTED]

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From: Mary Brigid Clingman, OP
Sent: Friday, February 25, 2022 12:07 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: Public Comment RE Above-ground Storage of High-level Radioactive Waste .docx

February 25, 2022

"RFI: Consent-Based Siting and Federal Interim Storage."
Sister Mary Brigid Clingman OP
Promoter of Justice Dominican Sisters ~ Grand Rapids (MI)

The Dominican Sisters ~ Grand Rapids (MI) who have been in ministry in New Mexico for a century and are still present initiated a CORPORATE STANCE ON NUCLEAR DISARMAMENT (2007) which includes our declaration that: **We believe all creation, including Earth itself, to be sacred and we stand in witness to the triumph of life over death, love over hatred, and hope over fear.**

Southwest Alliance To Save Our Future has issued statements concerning interim storage facilities. Several items in that report have especial concern for us. [NM legis.gov/handouts](https://www.nmlegis.gov/handouts)

- Radioactive Releases Threaten Our Health, Environment, and Ways of Life
- Transport Increases Risk Especially When Transported Twice
- Insurance Companies Do Not Cover Nuclear Accidents
- NM Has Large Hispanic Population Making This an Environmental Injustice
- NM Taking All the Nation's High-Level Radioactive Waste Is an Unfair, Unjust Burden

Further study, including the letter of concern by Diane Curran, strikes us that there was not intentional and comprehensive attention given to the requirement of *Free, Prior and Informed Consent* by communities that will be affected by these decisions.

Therefore, we join with Beyond Nuclear and their collaboration with 50 organizations and individuals to urge the U.S. Department of Energy to re-do its fatally flawed [Dec. 1 Request for Information re: "consent-based siting" of federal consolidated interim storage facilities](#) for highly radioactive wastes.

Respectfully submitted,

Mary Brigid Clingman O.P.

Sister Mary Brigid Clingman, OP
Promoter of Justice
Dominican Sisters ~ Grand Rapids

[REDACTED]

Freedom is the continuous action we all must take, and each generation must do its part to create an even more fair, more just society." John Lewis

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February 25, 2022

"RFI: Consent-Based Siting and Federal Interim Storage."

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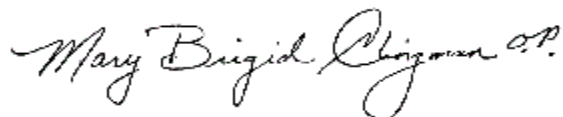
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Respectfully submitted,



Sister Mary Brigid Clingman, OP
Promoter of Justice
Dominican Sisters ~ Grand Rapids



Freedom is the continuous action we all must take, and each generation must do its part to create an even more fair, more just society." John Lewis

From: Laura Colston
Sent: Friday, February 25, 2022 10:49 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Laura Colston

[REDACTED]

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From: Kara Colton
Sent: Wednesday, March 2, 2022 11:35 AM
To: Consent Based Siting
CC: Kirshenberg, Seth <Alert>; Sarah Templeton; Dylan Kama
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage - ECA Input
Attachments: FINAL ECA Comments on RFI on CBS and Interim Storage 3222 4874-1588-4562 v.1.pdf; 211201.ECA CBS Opinion piece.pdf; FINAL ECA Comments on Draft Consent-Based Siting Process April 2017.pdf

Please find attached comments from the Energy Communities Alliance (ECA) on the Department of Energy's **Request for Information on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities**, as published in the Federal Register on December 1, 2021. As always, ECA appreciates the Department's outreach efforts and the opportunity to provide input. If you have questions or if we can provide any additional information, please contact Kara Colton, ECA's Director of Nuclear Energy Programs, at [REDACTED]

Thank you,
Kara



Kara S. Colton
Director of Nuclear Policy | Energy Communities Alliance
[REDACTED]
[REDACTED]
[REDACTED] www.energyca.org

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March 2, 2022

Office of Nuclear Energy
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

Attention: Alisa Trunzo

Sent Via Email: consentbasedsiting@hq.doe.gov

RE: Energy Communities Alliance Comments on [Federal Register Notice](#) – Request For Information: Consent-Based Siting and Federal Interim Storage

As the only association representing local elected officials in DOE’s frontline communities currently serving as *de facto* interim storage sites for the government’s legacy nuclear defense waste and spent nuclear fuel¹, as communities already hosting demonstrations of advanced nuclear technologies and the government’s nuclear-related research, and as communities actively seeking to support future nuclear development, the Energy Communities Alliance (ECA) welcomes the opportunity to provide input on DOE’s Request For Information on Consent-Based Siting and Federal Interim Storage.

Upon the release of [DOE’s Request for Information](#) (RFI) in December 2021, ECA published “[A New Path Forward for Nuclear Waste Disposal: DOE Releases RFI for Consent-Based Siting](#)” (attached). After reviewing the RFI in more depth we offer these additional comments:

¹ DOE INL is the interim storage site for spent nuclear fuel originally from the Three-Mile Island reactor site. INL site spent nuclear fuel storage installation is a horizontal concrete storage facility.

1. **ECA continues to support all DOE efforts to find a solution for communities storing nuclear high-level waste (HLW) and spent nuclear fuel (SNF) – defense and commercial (herein referred to as “waste”).**

The release of the RFI is a positive step in the right direction and ECA supports and will work with DOE to develop a solution for addressing the Country’s waste issues.

Some of that waste is stored safely in pools, dry cask storage, and cannisters in use beyond the timeframe originally designed, expected or previously negotiated with state and local governments. For communities hosting DOE’s federal facilities, the absence of a disposition path for HLW stands in the way of completing the riskiest environmental cleanup in the Country and mitigating the risks to human health and the environment created by DOE in these communities. In some cases that waste serves as a barrier to site reuse as local governments work to ensure the economic health and growth of their communities.

2. **DOE must prioritize the management and disposal of DOE’s HLW as part of any process to develop interim storage facilities – and a permanent geological repository.**

DOE must prioritize the movement of DOE’s HLW and SNF from our communities. This is DOE’s responsibility. Our frontline communities bear the brunt of the waste created by the development of nuclear weapons and government-sponsored nuclear research. The federal government has shipped to and stored waste in our communities and entered into binding legal agreements to move the HLW from our communities. DOE must demonstrate a commitment to meeting this legal obligation. After 75 years of supporting – and contributing to – the Country’s national security mission, these communities cannot be given any impression that the most dangerous waste stored at the sites in their communities will not be addressed as DOE departs from current law and pursues a new path forward.

ECA has testified in the past that the absence of an interim storage facility or permanent geological could directly impact DOE’s environmental cleanup mission. In the absence of a disposition path for defense HLW, it will likely be stored on site until a geological repository is available. This

could mean the Office of Environmental Management will need to use cleanup funding for new waste storage buildings rather than on actual cleanup and risk reduction.

ECA suggests as an alternative that the Department reconsider a defense-waste only repository.

3. There is no one-size-fits-all consent-based siting agreement – there must be flexibility and it must be legally enforceable.

ECA supports developing a step-wise process for siting interim storage facilities (and a permanent geological repository) based on trust between the parties, sound science, early and ongoing meaningful engagement with potential hosts considered as “partners,” and with resources provided to ensure a potential host community can fully understand the risks and benefits of hosting a storage or disposal facility. **Enduring consent requires informed consent.**

However, there is additional information DOE can provide that is unlikely to change based on a specific site. DOE can continue to move forward, building on the momentum created by the RFI, by establishing new site selection data such as acceptable geologies, geography and proximity to population centers to guide interested parties and help them determine if a potential site is eligible to host a storage or disposal facility.

In addition, DOE should provide their perspective on questions including:

- Who within a state should sign a consent-based siting agreement?
- Who will sign on behalf of the federal government?
- How does DOE intend to measure “consent”?
- How will impacted parties be defined and how will input be weighed in the decision?
- What kinds of compensation or incentives are negotiable for a community hosting this mission on behalf of the Country?
- At what point in the consent-based siting process can a potential host state, community or Tribe pull out of the process? At what point are they committed to moving forward?

By creating parameters, DOE can create a more efficient, realistic process that takes into account social, political, technical and environmental limitations from the outset.

4. All options – federal and private sites – should be considered and more information on any potential federal sites under consideration is necessary.

Given the well-documented difficult history of siting, DOE should support existing efforts underway to develop interim storage facilities. As noted in comments ECA has previously filed, the Nuclear Regulatory Commission (NRC) has already issued a license or is reviewing license applications for two private facilities and those developers are already engaged with host communities and state governments.

If DOE chooses to focus only on federal sites for new waste storage facilities, ECA, as communities hosting federal sites, needs to know more. Is DOE considering one of our sites already? If so, which one(s)? When does DOE plan to engage with local governments about the potential for a new interim storage facility at their sites? Will it be under a newly negotiated consent-based siting agreement if the federal site already exists? What other federal agency is willing to even discuss nuclear waste storage on its sites?

5. DOE's efforts to site an interim storage facility should move forward in parallel with efforts to site a geological repository.

It is important to state again that given our experiences as hosts of DOE's federal facilities, where work and the political environment can be difficult and schedules often slide, ECA strongly cautions that in the absence of a legal definition of "interim" or demonstration of progress to develop a geological repository, it will be difficult to find volunteer host communities for a nuclear waste facility or to build public support for it.

However, should a community consider hosting an interim storage facility, ECA recommends that they ensure the definition of "interim" is defined within a legally enforceable consent-based siting agreement.

6. Continued failure to address the back end of the fuel cycle may inhibit new nuclear development.

ECA shares renewed bipartisan support for nuclear energy as part of a clean, low-carbon future². In fact, ECA has established a first-of-a-kind initiative to define the role of local governments in supporting the development of the new nuclear technologies. ECA communities are already engaged in critical nuclear research and development underway across the DOE complex – such as advanced nuclear reactors at the Oak Ridge National Laboratory in Tennessee, the production of high-assay low-enriched uranium (HALEU) in Piketon, Ohio; and starting the Versatile Test Reactor, the NRC-approved NuScale small modular reactor and the newly announced Department of Defense mobile nuclear microreactor prototype at Idaho National Laboratory. We are eager to match the strengths and needs of our communities with new nuclear opportunities and ensure the U.S. is a leader in nuclear development around the world.

However, in discussions already underway with economic development entities in our communities, the question of waste is inevitable. The absence of a permanent solution for HLW and SNF undermines for many the myriad benefits advanced nuclear projects present. DOE's failure to include the waste in our communities in the RFI only stands to make that discussion more difficult.

The challenge of siting, constructing and operating a nuclear waste facility in an environment subject to political change has become even clearer in the few months since the RFI was published in the Federal Register. State governments in two states where local consent had been reached on hosting interim storage facilities moved aggressively to prevent these efforts. After signing [House Bill 7](#) last fall banning the storage or disposal of HLW in Texas, Governor Abbott in February joined [Texas's petition](#) urging the U.S. Court of Appeals to vacate a federal license for Interim Storage Partners issued by the Nuclear Regulatory Commission (NRC). In New Mexico, just as Holtec is expecting to receive an NRC license this year for a temporary nuclear storage facility,

² See more on [ECA's New Nuclear Initiative](#) to define the role of local governments in supporting the development of the new nuclear technologies.

state [Senate Bill 54](#) and state [House Bill 127](#) were introduced. Both were defeated, but had they passed, state agencies would have been barred from issuing permits for high-level nuclear waste storage facilities.

Do not let the comment review period create unnecessary delay. We need to avoid these results of stops and starts. ECA again urges DOE to incorporate lessons learned from past efforts to site nuclear waste facilities and define “consent.” It is already clear what **not** to do, and recommendations submitted by many respondents over the years (for example, creating a new entity focused solely on managing and disposing of high-level nuclear waste and spent nuclear fuel) have yet to be implemented. This renewed effort needs commitment from DOE to act and a trusted champion in place empowered to act on behalf of the federal government³ to ensure that.

ECA appreciates the opportunity to comment and looks forward to supporting this engagement effort. We provide responses to specific questions outlined in the RFI in Appendix A. However, as many of the questions are the same as those posed during previous efforts related to siting nuclear waste facilities – and **as ECA positions have not changed** – we refer DOE to the documents attached and linked below:

- [ECA Comments to DOE on the Draft Consent-Based Siting Process](#), April 2017
- [ECA Comments to DOE on Designing a Consent-Based Siting Process: Summary of Public Input](#), October 2016
- [ECA Comments to DOE on the Design of a Consent-Based Siting Process](#), July 2016
- [ECA Community Handbook on Nuclear Energy: Understanding Nuclear Energy and Alternatives for the Future](#), Chapter 2: The Role of Local Governments in Siting, April 2014
- [ECA Testimony before the Senate Committee on Energy and Natural Resources Committee on the Nuclear Waste Administration Act of 2013](#), July 2013
- [ECA Comments on Senate Discussion Draft Discussion of Nuclear Waste Legislation](#), May 2013

³ [Coalition Letter to DOE Requesting DOE Establish an Office Dedicated to Nuclear Waste Management](#), May 3, 2021

- [ECA Testimony to the Senate Committee on Energy and Natural Resources regarding the Nuclear Waste Administration Act of 2012](#), September 2012

For any questions or for additional information, please contact Kara Colton, ECA's Director of Nuclear Policy, by phone at [REDACTED] or by email at [REDACTED]

APPENDIX A

QUESTIONS FOR INPUT

As noted, the information provided below is in addition to ECA’s previously submitted input on these questions (links provided above) and includes new comments from ECA communities since the release of the RFI in December 2021.

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

DOE should ensure considerations of social equity and environmental justice are part of designing a future consent-based siting process, especially given the multi-decade (if not generational) timeframe for a nuclear waste facility. However, DOE should work with a potential host community to determine how “social equity” and “environmental justice” will be defined and evaluated. DOE should also provide resources and various avenues to ensure citizens in any potential host community have multiple opportunities to be informed, provide input and participate in public meetings.

DOE should also look at social equity and environmental justice impacts in the host communities chosen by the federal government decades ago that still host DOE’s nuclear missions today. Our communities trusted that DOE would follow the law, and per the Nuclear Waste Policy Act (NWPA), the HLW and SNF would be disposed of at a geologic repository at Yucca Mountain. Now the NWPA must be amended, there is no disposition path for this waste, and high-level defense nuclear waste is not part of the RFI. DOE should consider that failing to address legacy defense waste may create social equity and environmental justice issues in existing host communities, and could perhaps undermine the confidence that a future host community can trust DOE to prioritize the sites that host federal nuclear waste missions over time.

One suggestion to address the long-term health, viability and resiliency of both existing and future host communities is to prioritize them for other cross-cutting Department-wide efforts

like place-based initiatives, energy jobs creation, clean energy demonstrations or building the supply chain. This can serve as an incentive to a host community, it can ensure future economic development opportunities for that community with benefits to the State and/or region, and can foster collaboration between DOE and host communities on shared goals over time.

2. What role should Tribal, State and local governments and officials play in determining consent for a community to host a federal interim storage site?

A successful consent-based siting agreement will need Tribal, State and local government support, and will need to reflect the values, priorities and concerns of each. But consent should ultimately be determined by those most directly impacted by hosting a nuclear waste facility, with the local government best positioned to negotiate on behalf of a host community and a Governor on behalf of the State.

It would be helpful, however, to hear more from DOE on who the “necessary parties” are that will be required to sign a legally enforceable consent-based siting agreement – not only at the local, State or Tribal level, but also on behalf of the federal government.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based siting process and how could they be addressed?

A challenge thus far has been defining “impacted parties” to avoid siting issues like those around Yucca Mountain. DOE may want to consider proximity to the nuclear waste facility and Nuclear Regulatory Commission siting criteria for reactors to determine how best to “weigh” input from varied stakeholders.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal facilities?

As ECA has previously commented, DOE can help local communities establish reasonable expectations by providing more guidance on what an interim storage facility requires (amount of land, type of geology, etc.), the timeline and outlook for pursuing a permanent geological repository, and potential incentives (for example, co-location of another DOE facility, funding

for infrastructure or education, a new lab mission, etc.). The more information DOE can provide to potential hosts at the outset, the more informed the decision-making process will be, and the more a local government will be able to gauge whether “consent” can actually be reached in a given community before expending limited resources to build support with Tribes and the State.

ECA is similarly advising local governments in potential host communities to begin now to realistically consider the terms – such as limits on acceptable volumes of waste, financial incentives, oversight requirements, funding or training to ensure emergency response capabilities at the state and/or local level and legal assurances – under which they will consent to host an interim storage facility to jump start any discussion with DOE, as well.

Area 2: Removing Barriers to Meaningful Participation

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

ECA appreciated that under the previous consent-based siting initiative DOE acknowledged that informed participation will require providing financial and technical resources to communities to enable effective participation and informed decision-making. As ECA has stated many times, informed consent can only be reached if affected local governments and their communities fully understand the benefits and risks that are associated with siting, constructing, operating and hosting a nuclear waste storage facility. Funding must be provided to support outreach and education programs that allow local governments to hire their own third-party experts to undertake independent analyses, to develop educational materials tailored to their specific community, and to create opportunities for public comment. ECA also supports DOE’s prior suggestions that funding could be provided to help potential hosts with community planning, economic development or visioning exercises to determine how hosting an interim storage facility works with their/the State’s longer-term objectives.

Area 3: Interim Storage as Part of a Waste Management System

- 2. What are the possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?**

ECA believes co-location can be an incentive for host communities looking to ensure future viability and resiliency. This can also demonstrate DOE's commitment to and interest in supporting the community's vision over time.

- 3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?**

While the terms of hosting an interim storage facility in the absence of progress on a permanent repository is ultimately up to a potential host community, ECA believes that in the absence of a plan for pursuing permanent geologic disposal for HLW and SNF and without a legal definition of "interim" (although a potential host could choose to set it as part of any consent-based siting agreement), it will be far more difficult to find interested communities or build public support for it.

A New Path Forward for Nuclear Waste Disposal? - DOE Releases RFI for Consent-Based Siting

November 30, 2021

Today, the Department of Energy (DOE) released in the Federal Register a [Notice of Request for Information \(RFI\) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities \(CBS\)](#).

Energy Communities Alliance (ECA) has long anticipated this action and we hope it marks the meaningful resumption of the Department's efforts – as it is the federal government's ***responsibility*** – to manage and dispose of the Country's defense and commercial high-level radioactive nuclear waste (HLW) and spent nuclear fuel (SNF).¹ As *de facto* storage sites for this waste sitting in our communities for decades beyond what was originally envisioned, we urge the Administration and DOE to not only prioritize the disposal of HLW and SNF, but to truly commit to pursuing a solution and taking actions to demonstrate that commitment - for the safety of our frontline communities.

While ECA is still reviewing the RFI, we have some immediate concerns:

1. There is no mention of the government's legacy defense HLW that remains orphaned at the Savannah River Site in South Carolina, the Idaho National Laboratory and the Hanford Site in Washington. DOE is solely responsible for this waste that, like the spent nuclear fuel from commercial reactor sites, was originally destined for Yucca Mountain. Given the emphasis on environmental justice and equity, ECA communities that have long supported the nation's national security mission and currently host the government's nuclear research activities must be prioritized, included in any strategy or timeline, and alternatives like the HLW Interpretation must be fully analyzed.
2. It appears the Department is moving ahead to develop interim storage in the absence of a plan or process for siting a permanent geological repository. ECA has long argued that interim storage must exist alongside a permanent solution and both should be pursued in parallel. Without a legal definition for the term "interim" or demonstration that there is another receiver site for the waste, it will be far more difficult to find volunteer host communities for a nuclear waste facility or to build public support for it.
3. There are companies in the private sector that have been working for years to design and site safe, risk-based interim storage facilities. Some have already built support within specific communities on private land and have already undergone or have plans to submit for Nuclear Regulatory Commission review. Given the difficult history of siting, ECA is concerned that DOE appears only to be considering federal facilities. While there should be parameters and criteria

¹ Spent nuclear fuel is fuel removed from a commercial nuclear power reactor after being used to produce electricity. High-level waste is part of the environmental legacy resulting from five decades of nuclear weapons production and government-sponsored nuclear energy research at sites hosted by and adjacent to ECA's frontline communities.

laid out to facilitate siting (for example, acceptable geologies or geography), it seems very short-sighted not to have all options – government-owned and privately-held – on the table.

ECA fully intends to address these concerns and provide detailed input on each specific question posed in the RFI. However, the questions are not new. The challenges are not new. ECA urges DOE to consider work already done and input already received to more quickly (re)build momentum. Do not start back at square one.

Since the late 1970s, the federal government has been looking at how to guide the siting process for interim storage and permanent geologic disposal of HLW and SNF. We have findings from President Jimmy Carter’s Interagency Review Group report in 1978; tomes of testimony from hearings on bills like the Nuclear Waste Policy Act of 1982, the Nuclear Waste Administration Act(s) of 2013 and 2015, the Nuclear Waste Policy Amendments Act of 2019; and reams of input gleaned from the multi-year work of the Blue Ribbon Commission on America’s Nuclear Future under former President Barack Obama.

We also have tangible, real world examples to consider: Yucca Mountain may have had local support, but it never had State support; Private Fuel Storage, LLC had tribal support and an NRC license, but again, without State support and alongside opposition from other agencies within the federal government, it too failed.² Borehole tests that did not even involve radioactive waste were abandoned in the Dakotas in the absence of meaningful education and outreach. Most recently, we saw how long timelines and political change impacted the experience of Waste Control Specialists in Texas, where in just five years the Commissioners Court in Andrews County – the local government in the proposed host community – went from passing a resolution unanimously supporting a consolidated interim storage site for HLW and SNF in 2015, to passing another resolution unanimously opposing it in 2021.

These failed national efforts, along with our own experiences as hosts of federal nuclear weapons, energy, and research facilities illustrate very basic truths that must be the foundation of any consent-based siting process:

1. **Trust between the parties is paramount.** DOE will need to focus on rebuilding trust after years of fits and starts, after failing to follow the existing Nuclear Waste Policy Act, and in the absence of assured funding or a dedicated entity responsible for HLW and SNF management and disposal.
2. **Decisions must be perceived as fair and based on sound science.** “Risk” (real or perceived) must be addressed and there must be transparency at each step of the process.
3. **There must be early, meaningful and ongoing engagement** with potential host communities as “partners” in the consent-based siting process. Without local support, these projects will fail.
4. **Consent-based siting will require “informed” consent** which can only be reached if affected local governments and their communities fully understand the benefits and risks associated with siting, constructing, operating and hosting a nuclear waste storage or disposal facility. Financial

² In February 2006, the Nuclear Regulatory Commission granted a license for a proposed interim storage facility on 820 acres of the Skull Valley Band of Goshute Indian reservation in Utah. The State quickly filed a challenge and a few months later, the U.S. Department of Interior denied a right-of-way over federal lands, halting construction. The Bureau of Indian Affairs, an office of the Department of Interior, also refused to back the project.

resources must be provided to support outreach and education programs and allow local governments to hire their own third-party experts to undertake independent analyses, develop educational materials for distribution and to create/participate in opportunities for public comment.

5. **There is no one-size fits all model for a consent-based siting agreement**, but any agreement will ultimately need to be legally enforceable and outline specific oversight roles. This can help offset changing political winds at the federal, state and local level, and provide long-term continuity and consistency in leadership and programmatic priorities that, as a GAO report recently noted, is “critical for the success of projects spanning multiple decades.”³

If these five basic assumptions underlie DOE’s latest effort, if DOE builds off lessons already learned, ECA is optimistic the country has a better chance of finally siting, constructing and operating nuclear storage and disposal facilities as part of an integrated nuclear waste management system. In addition, even as we wait for public input to be filed, DOE can set the wheels in motion by developing initial lists of the types of incentives that could be offered to host communities, working now with the NRC and EPA to develop scientifically-based health and environmental standards, or drafting model laws or regulations to guide the siting process.

DOE owes it to frontline communities that have long supported our national security and energy needs to address **both** HLW and SNF safety and disposal issues. By doing so, DOE can accomplish its environmental cleanup mission while providing confidence that the country should pursue new nuclear development to produce clean energy, mitigate the impacts of climate change, create medical isotopes to fight cancer, or propel us further into Space.

There are potential host communities out there. Some may already be hosting nuclear missions, while some may be trying to understand if they are even eligible. Let the past inform the future, address HLW and SNF with the urgency it deserves, and open the door to the benefits of the next generation of nuclear.

We’ve been down this road before – let’s see if we can get to the end this time.

³ GAO-21-603 Commercial Spent Nuclear Fuel, p.24



**COMMENTS
ON BEHALF OF ENERGY COMMUNITIES ALLIANCE**

**SUBMITTED TO THE
U.S. DEPARTMENT OF ENERGY
ON**

**DRAFT CONSENT-BASED SITING PROCESS FOR CONSOLIDATED
STORAGE AND DISPOSAL FACILITIES FOR SPENT NUCLEAR FUEL
AND HIGH-LEVEL RADIOACTIVE WASTE**

APRIL 14, 2017

Submitter's Name/Affiliation: Energy Communities Alliance
Contact: Kara Colton, Director of Nuclear Energy Programs
Email: [REDACTED]
Phone: ([REDACTED])

COMMENTS ON THE DRAFT CONSENT-BASED SITING REPORT
AND ECA RECOMMENDATIONS

The Energy Communities Alliance (ECA) appreciates the many opportunities the Department of Energy (DOE) extended to stakeholders throughout its process to design and propose a consent-based siting process. While it is uncertain whether the “consent-based siting” effort will continue under the new Administration, since the 2013 release of DOE’s Strategy, the Department has supported ECA working closely with each other and with DOE officials to meaningfully highlight our concerns and priorities while trying to address the challenges related to storing and disposing of the nation’s high-level nuclear waste (HLW) and spent-nuclear fuel (SNF).

ECA’s comments on DOE’s “*Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste*,” (DOE’s Draft CBS Process) released on January 12, 2017, follow. Regardless of the path forward, ECA is urging DOE, Congress and the Administration to maintain transparency, collaboration, respect for taxpayers dollars already spent, and most importantly, momentum.

ECA Recommendations

Throughout discussions of designing a consent-based siting process, ECA’s top recommendation to DOE has been to:

- 1. Finish the Yucca Mountain licensing review and modify the Nuclear Waste Policy Act (NWPA) to authorize consideration of alternative sites for interim storage or permanent disposal – including Yucca Mountain – in parallel.**

The Nuclear Waste Policy Act is the law of the land and it is important to allow the licensing process to proceed so that sound science – rather than political science – forms the basis of decision-making; and to re-establish trust that DOE will follow the law. This is especially important given any host community will ultimately want to negotiate and ratify a legally-

Submitter's Name/Affiliation: Energy Communities Alliance
Contact: Kara Colton, Director of Nuclear Energy Programs
Email: [REDACTED]
Phone: [REDACTED]

enforceable consent-based siting agreement with the federal government before agreeing to host a nuclear waste storage or disposal facility. Given DOE's past efforts to withdraw the Yucca Mountain license application, to terminate the MOX project in South Carolina and missed milestones in DOE's environmental cleanup, the Department will have to tangibly demonstrate to a host community that it will operate per the terms of a consent-based siting agreement regardless of political shifts in order to achieve public acceptance and support.

In regards to alternatives such as private consolidated interim storage proposals from the Eddy Lea Energy Alliance and Waste Control Specialists, or clarifying waste definitions to reflect composition rather than origin, all could enhance a nuclear waste management system that includes Yucca Mountain. They are nearer-term alternatives that can increase the robustness of approach by ensuring "all eggs are not and will not be in one basket."

In addition, ECA outlined eight other recommendations to DOE in the effort to design a consent-based siting process:

- 2. Continue working with local governments to define and identify components of "consent".**
- 3. Identify the necessary process – including the order that each step should be accomplished – to move a consent-based siting process forward.**
- 4. As part of a consent-based siting process, Congress/Administration must provide resources and funding for education, outreach, feasibility studies and research and development aspects for waste management and disposal. In addition, DOE must use this funding to assist local governments and communities interested in hosting sites or involvement in waste management and disposal missions to educate the local community and hire independent third party scientists and engineers.**
- 5. DOE should develop a list of suitable disposal mediums (salt, granite, etc.) and indicate where they exist to inform potential public interest and feasibility studies.**

Submitter's Name/Affiliation: Energy Communities Alliance
Contact: Kara Colton, Director of Nuclear Energy Programs
Email: [REDACTED]
Phone: [REDACTED]

6. A new entity focused solely on high-level nuclear waste (HLW) and spent nuclear fuel (SNF) management and disposal should be established and empowered to consent on behalf of the federal government.
7. DOE must first develop an initial list of the types of incentives/compensation the federal government is willing to offer for host communities for taking on this mission and to preclude wasting time and resources.
8. DOE, the Nuclear Regulatory Commission (NRC) and the Environmental Protection Agency (EPA) should begin to develop scientifically-based health and environmental standards, model state laws and regulations to guide the siting process.
9. If tangible progress cannot be made in a timely manner, the federal government should provide funding for communities that have become *de facto* interim storage sites for defense HLW and commercial SNF at decommissioned nuclear reactor sites. The funds will be used to help those communities offset the impacts of storing waste beyond the timeframe originally expected.

In large part, these recommendations encompass many of the design principles DOE identifies in the *Draft CBS Process* for effective consent-based siting process: **Prioritization of Safety, Environmental Responsibility, Regulatory Requirements, Trust Relationship, Informed Participation, Equal Treatment and Full Consideration of Impacts, Community Well-being, Voluntariness/Right to Withdraw; Transparency; and Stepwise and Collaborative Decision-Making that is Objective and Science-Based.** Local, state and federal governments will share the responsibility for ensuring these principles are the foundation of any policy-making and are demonstrable to the public.

To that end, ECA especially appreciates DOE's acknowledgement that informed participation will require providing financial and technical resources to communities to enable effective

Submitter's Name/Affiliation: Energy Communities Alliance
Contact: Kara Colton, Director of Nuclear Energy Programs
Email: k[REDACTED]g
Phone: ([REDACTED])

participation and informed decision-making. As we have stated in earlier comments submitted to DOE, “informed consent can only be reached if affected local governments and their communities fully understand the benefits and risks that are associated with siting, constructing, operating and hosting a nuclear waste storage or disposal facility. Financial resources must be provided to support outreach and education programs that allow local governments to hire their own third party experts to undertake independent analyses, develop educational materials for distribution, and to create their own opportunities for public comment.”

ECA also appreciates DOE’s idea that potential hosts could use this funding for community planning, economic development or visioning exercises to determine how hosting a facility works with its long-term objectives. ECA agrees that this would be very useful, but without an idea of the specific level of funding that will be requested/made available for these activities – or how many potential host communities would be eligible to receive them – building local support to introduce the conversation is more difficult.

One aspect of the process ECA believes could be very helpful for potentially interested local governments to have as they begin to engage their communities is an initial list of the types of incentives/compensation DOE is willing to offer host communities taking on this mission. While there is widespread acceptance that “one size will not fit all,” simply knowing potential benefits (funding for infrastructure or education, new national lab mission, for example) can help community and state leaders begin the discussion. As ECA previously commented, the more information DOE can provide to potential hosts at the outset, the more informed the decision-making process will be, and the more a potential host will be able to gauge whether “consent” can be reached.

ECA does appreciate DOE’s efforts to outline the five phases and specific steps of each phase in the Draft CBS process. ECA had asked DOE to provide the steps and the order in which they must be taken in order to better understand the projected timeline. However, the rough estimates of schedule and absence of real projected costs per phase does not provide confidence that DOE

Submitter's Name/Affiliation: Energy Communities Alliance
Contact: Kara Colton, Director of Nuclear Energy Programs
Email: k [REDACTED]
Phone: [REDACTED]

can begin operation of a pilot interim storage facility by 2021, a larger interim storage facility by 2025 or a repository by 2048 using the consent-based siting process. Furthermore, the analysis does not compare the timeline for implementing a consent-based siting process in such a way that it can be compared to other waste disposition strategies such as moving forward to open Yucca Mountain.

What ECA Still Needs to Know

ECA finds that the Draft CBS Process still leaves a number of key questions unanswered:

- Who are the “necessary parties” that must approve the agreement?
- Who at the local, state and federal level is authorized to sign a formal consent agreement?
- How will consent ultimately be measured?
- How will proposed agreements be evaluated and by whom?
- How can funding over time for waste management and disposal be assured?
- What off-ramps exist in the consent-based siting process and at what point in the process can consent no longer be withdrawn?
- Will DOE or a new implementing organization develop a preliminary list of incentives they will consider for potential host communities to assist them as they begin evaluating whether support exists to pursue hosting a facility?
- What oversight roles does the federal government envision for host communities and states in the development, operation and closure/decommissioning of the proposed facility?
- When a facility ultimately closes, how will the federal government continue to support the host community?

ECA agrees with DOE that “timely and frequent” engagement with stakeholders is critical, as stated throughout the report. However, the Draft CBS process assumes this engagement will answer many of these questions in the absence of guidance from DOE. DOE needs to provide

Submitter's Name/Affiliation: Energy Communities Alliance
Contact: Kara Colton, Director of Nuclear Energy Programs
Email: [REDACTED]
Phone: ([REDACTED])

more information to ensure potential hosts fully understand what options can be considered and what options are non-starters.

Finally, as an organization comprised of local communities, ECA appreciates that the Draft reflects an understanding that the local community is generally most affected by any siting process. However, while the word “community” is used throughout the report, it is used very broadly to encompass state government, Congressional delegations as well as any Tribal governing body. ECA strongly recommends that if the process is to move forward, DOE needs to more specifically define the roles and responsibilities for each impacted party.

In conclusion, ECA appreciates the many opportunities we have had to provide input on DOE's consent-based siting initiative. We thank former Acting Assistant Secretary John Kotek, Andrew Griffith, Melissa Bates, Andrew Richards, Nancy Buschman and their colleagues in DOE's Office of Nuclear Energy for their engagement with local governments and support for ECA.

ECA looks forward to continuing to work with DOE in the future on any initiative to safely manage and dispose of high-level nuclear waste and spent nuclear fuel. It is imperative that the issue is addressed with respect to existing law, with an understanding that legislative change is likely to be required, and most importantly, with urgency. ECA communities accepted a national security mission when it was most necessary, and the federal government must fulfill its end of the bargain to move that waste out of our communities as safely and expeditiously as possible.

From: Henrietta Cosentino
Sent: Wednesday, March 2, 2022 8:41 AM
To: Consent Based Siting
CC: Henrietta Cosentino
Subject: [EXTERNAL] RFI, Consent-Based Siting

As chair of the nuclear affairs committee of the Plymouth Area League of Women Voters, and as an at-large member of the nuclear decommissioning citizens advisory panel (ndcap), I am writing in support of **Consent Based Siting**. To inflict nuclear power sites on an unwilling populace is inherently undemocratic, unjust and cruel. Social justice and environmental equity are key considerations in the siting of a power plant and to achieve these it is crucial to engage Local, State and Tribal government officials. It is also crucial to remove barriers to participation.

It is also necessary to give very careful consideration to the role of interim storage as part of the waste management system. There are serious unresolved questions as to the wisdom of co-locating multiple interim storage facilities: security issues as well as environmental equity and justice issues.

We also worry that the very existence of temporary facilities will slow or halt any serious search for a permanent facility.

Henrietta Cosentino
Chair, Nuclear Affairs Committee, Plymouth Area League of Women Voters
At-large member, NDCAP
Residential:

[REDACTED]

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From: Mark Cosgriff
Sent: Monday, February 28, 2022 5:56 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Mark Cosgriff



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From: Doug Hansen
Sent: Thursday, March 3, 2022 10:43 AM
To: Consent Based Siting
Subject: [EXTERNAL] Consent Based Siting RIF- Utah Comments
Attachments: DEQ DOE RFI- Consent-Based Siting and Federal Interm Storage_022422 (2).pdf

Please find the attached comments from Governor Spencer J. Cox regarding Utah's perspective on consent based siting for temporary storage of spent nuclear fuel. Thank you for this opportunity.

-Doug Hansen

--



Doug Hansen, PE

Director|

Division of Waste Management and Radiation Control

wasteandradiation.utah.gov

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

Statements made in this email do not constitute the official position of the Director of the Division of Waste Management and Radiation Control. If you desire a statement of the **Division Director's position, please submit a written request to the Director**, including copies of documents relevant to your request.

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Office of the Governor

State of Utah

SPENCER J. COX
Governor

DEIDRE M. HENDERSON
Lieutenant Governor

March 2, 2022

Secretary Jennifer Granholm
U.S. Department of Energy

RE: RFI: Consent-Based Siting and Federal Interim Storage.
Federal Register, Volume 86, No. 228, page 688244

Dear Secretary Granholm:

After careful review of the U.S. Department of Energy's Office of Nuclear Energy, Office of Spent Fuel and Waste, Request for Information (RFI) on using a 'Consent-Based Siting' process to identify federal interim storage facilities for the temporary, consolidated storage of Spent Nuclear Fuel (SNF), the state of Utah appreciates the opportunity to provide DOE with our perspective on the matter, including insights and areas of concern. Please consider the following comments for the areas of interest identified within the RFI:

Consent-Based Siting Process

The intrinsic worth and merits of Consent-Based Siting (CBS) offer an opportunity to achieve progress on the decades-old problem of the high-level nuclear waste management process. However, serious concerns remain regarding the current notion of "Interim Storage" and its impact on the overarching strategy for the permanent disposal of SNF. The state of Utah reaffirms its position that centralized interim storage cannot be a solution in and of itself unless it is firmly rooted to a workable solution for permanent disposal.

Utah's previous experience with the U.S. Nuclear Regulatory Commission (NRC) and a commercial entity known as Private Fuel Storage LLC (PFS), illustrated that it is critical that centralized interim storage does not become *de facto* permanent storage. This leaves Tribal, state, and local governments with facilities that lack the safeguards and assessment of impacts garnered from a permanent facility.

It is the state of Utah's experience that at no time was "*de facto*" permanent storage given consideration by the NRC during the PFS licensing proceeding, except for NRC adjudicators to rule that the state of Utah could not raise those issues due to the NRC's Waste Confidence

Decision. This left Utah without recourse to determine or even consider whether such an outcome was probable.

To this end, it is essential that the governor of an affected state be part of the decision-making process regarding the acceptability of a centralized interim facility within their state, regardless of whether the facility is located on private, federal, or Tribal land. Simply put, it is a state's right to determine what is in its own best interest.

Allowing states to have a decisional approval role for any interim SNF storage facility located within its boundaries, whether on an Indian reservation, federal installation, or otherwise will not only ensure the rights of states are left intact, it will also engender trust and confidence in the CBS process.

Licensed low-level radioactive waste facilities currently situated within Utah's boundaries include both active and inactive tailing ponds from uranium mills, as well as an over 10 million yd³ Low-Level Radioactive Waste disposal facility. Importantly, the state of Utah, as the licensing and regulatory oversight agency, has the decisional approval role for low-level radioactive waste facilities to ensure health, safety, and environmental concerns are adequately addressed. The DOE's CBS process could present an opportunity for the greater community of Utah to strengthen its capacity to respond and address the technical aspects of a noteworthy nuclear waste management system.

The success of community engagement around the enterprise of hosting a federal interim storage facility should be measured by:

- Whether the state has a decisional role in siting the facility.
- The degree to which participating parties have expertise with and have a track record of competently designing and managing nuclear waste storage facilities.
- The degree the licensing authority engaged in the CBS process can exhibit that the best interests of that community are at the forefront when making a decision.
- The ability of technical experts to effectively communicate the applicability of regulations, safety concerns, and other technical topics to the general public.
- Adherence to the principle that the potential hosting community will benefit from a process that communicates, "If you are concerned, I'm concerned. How do we work together to work through a problem and find solutions?"

Social Equity

DOE must also consider social equity (or inequity) from the perspective of a state that does not benefit from the generation of nuclear power. It is difficult to understand how and why a host community sited for interim storage should be left with the burden and risk of storing SNF generated from communities that reaped the benefits of hosting a nuclear power station (e.g., electricity, jobs, taxes, etc.). The broad scope of impacts needs to be balanced by both short and long term benefits.

The DOE's 2012 Blue Ribbon Commission Report (BRC) discusses the uncertainty that a dysfunctional waste management system poses to centralized interim storage. There is nothing "interim" about storage when two-thirds or more of the commercial inventory of SNF is sitting in a state with nary a repository in sight. The equity of a situation must be questioned when a

handful of states consolidate the liability and risk for storing SNF that was generated from 35 different states which, again, reaped the benefits of hosting a nuclear power station yet are absolved of their responsibility to store SNF. The following quote from the BRC Report given by an industry witness before Congress iterates this concern: "Complete lack of direction on nuclear waste management...and dereliction of responsibility on the part of the federal government creates substantial government-imposed risk..."¹ It is the DOE's responsibility to ensure that this social inequity is addressed appropriately.

Removing Barriers to Meaningful Participation

As advocated by many independent organizations, the state of Utah maintains that DOE interim storage should be licensed by the NRC. However, as alluded to earlier in this letter, in the past the state of Utah faced a litany of structural difficulties when it came to participating in the NRC's licensing proceedings, pertaining specifically to the siting of private interim storage of SNF.

Prior to the PFS proceeding, NRC had not considered an application to ship commercially spent nuclear fuel across the country to store in dry casks at a private, away-from-reactor, consolidated storage facility. The NRC decision to license the storage facility was based, in part, on the ability of intervening parties, such as Utah, to demonstrate, through expert witness testimony, areas where PFS failed to adequately address safety, environmental, or financial issues.

As DOE is well aware, there is a small cognoscenti of experts with the ability to address the nuclear, radiological, and technical issues involved in a nuclear licensing proceeding. A majority of these experts are employed by or have ties with industry or, because of funding, grants and licensing work, cannot risk developing a conflict of interest by opposing an applicant, DOE, or the NRC in a licensing proceeding. Specifically, the state of Utah raised a number of technical issues such as: the ability of storage casks to withstand an earthquake while stored over faults or the impact of a military fighter jet crash; the need for a hot cell or other ability to repackage spent nuclear fuel onsite; decommissioning; whether DOE would accept spent fuel from the interim facility; whether the facility would become de facto disposal; as well as other radiological concerns. All of these issues require specialized expertise, and Utah was limited to hiring international experts, those who work in academia (but aren't reliant on federal grants), or a select few experts within the United States.

Moreover, the state of Utah was required to simultaneously litigate against both NRC and PFS experts and was frustrated that the NRC hired National Laboratories, not to assist the NRC in making initial safety decisions, but to defend the PFS license application. As such, no independent technical oversight was available for the PFS proceeding. This was unfortunate because in the PFS proceeding many unprecedented technical standards were developed.

¹ Testimony of Jack Spencer, The Heritage Foundation, before the Subcommittee on Energy and Power, Committee on Energy and Commerce, United States House of Representatives, June 3, 2011, <http://www.heritage.org/research/testimony/2011/06/the-american-energy-initiative>.

However, those standards were established *ad hoc* before a three-panel licensing board. The state of Utah urges the DOE to integrate the Nuclear Waste Technical Review Board or create another independent technical board to provide broad technical oversight for the development of consolidated interim storage facilities.

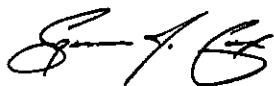
Additionally, Utah bore the entire financial burden related to its participation in the NRC proceeding, including hiring technical experts as required by the adjudicatory process. Both the limited availability of technical experts and our limited financial resources constrained the state's participation to ensure that all technical and environmental issues were adequately addressed prior to licensing. To improve the process, DOE should seek funding for stakeholder participation.

Environmental Justice

The state of Utah supports comprehensively addressing social equity and environmental justice issues. Environmental justice issues often arise but are not effectively addressed during the process of selecting an interim storage site on tribal land, as was the case during PFS's licensing process with the Skull Valley Band of Goshute Indians. This project bitterly divided the Band. In fact, Ohngo Gaudedah Devia (OGD), a group consisting primarily of Skull Valley Band members, independently intervened in the NRC licensing proceeding and filed an environmental justice claim, alleging, among other things, disparate economic and sociological impacts on minority and low-income populations compared to the overall populations. While the NRC Licensing Board found disparate impacts come, "not in direct environmental burdens but from the...balance of environmental burdens against economic benefits," the Commission overturned the Board's findings that it would address the merits of OGD's environmental justice claims stating "[c]laims of financial and political corruption . . . do not belong in our hearing process under the rubric of environmental justice or NEPA." OGD challenged the NRC's issuance of a license based on NRC's failure to address OGD's environmental justice claims.²

Once again, we applaud the DOE for taking the time to review and consider comments and perspectives in areas of Social Equity, Removing Barriers to Meaningful Participation, and Environmental Justice. Each of these three considerations is critical to the Consent-Based Siting process for identifying federal interim storage facilities for Spent Nuclear Fuel. I look forward to meaningful consideration as we continue to participate in the community engagement process.

Sincerely,



Spencer J. Cox
Governor

² On April 24, 2017, the U.S. Court of Appeals for the District of Columbia "administratively" terminated OGD's and Utah's consolidated appeal "without prejudice to the reopening of the cases by any party at any time upon the filing of a motion identifying the issues remaining to be litigated . . ."

From: Bruce Cratty
Sent: Saturday, February 26, 2022 7:12 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

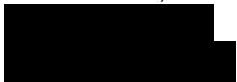
Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Bruce Cratty



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From: Henry Crichlow
Sent: Thursday, March 3, 2022 5:17 AM
To: Consent Based Siting
CC: SELF; Gary Schneider; Rodney Ewing
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: 1 NuclearSAFE Technology LLC Response to USDoE Request for Using Consent-Based Siting Process.pdf

Re: RFI: Consent-Based Siting and Federal Interim Storage
Date: 3/3/2022

Please find the response by NuclearSAFE Technology LLC to the above mentioned USDoE RFI notice of 12/1/2021 in the Federal Register.

Please note that since USDoE indicated that it shall NOT confirm receipt of the RFI document, NuclearSAFE is submitting TWO identical response documents, from two different sender emails in the event that the USDoE spam filter rejects one of the RFI reports.

NuclearSAFE requests that if both emails and attachments are successfully received by USDoE, that USDoE select and use only one copy of the submitted report.

Submitted by:

Dr. Henry Crichlow

CEO, NuclearSAFE Technology LLC

Sender emails:

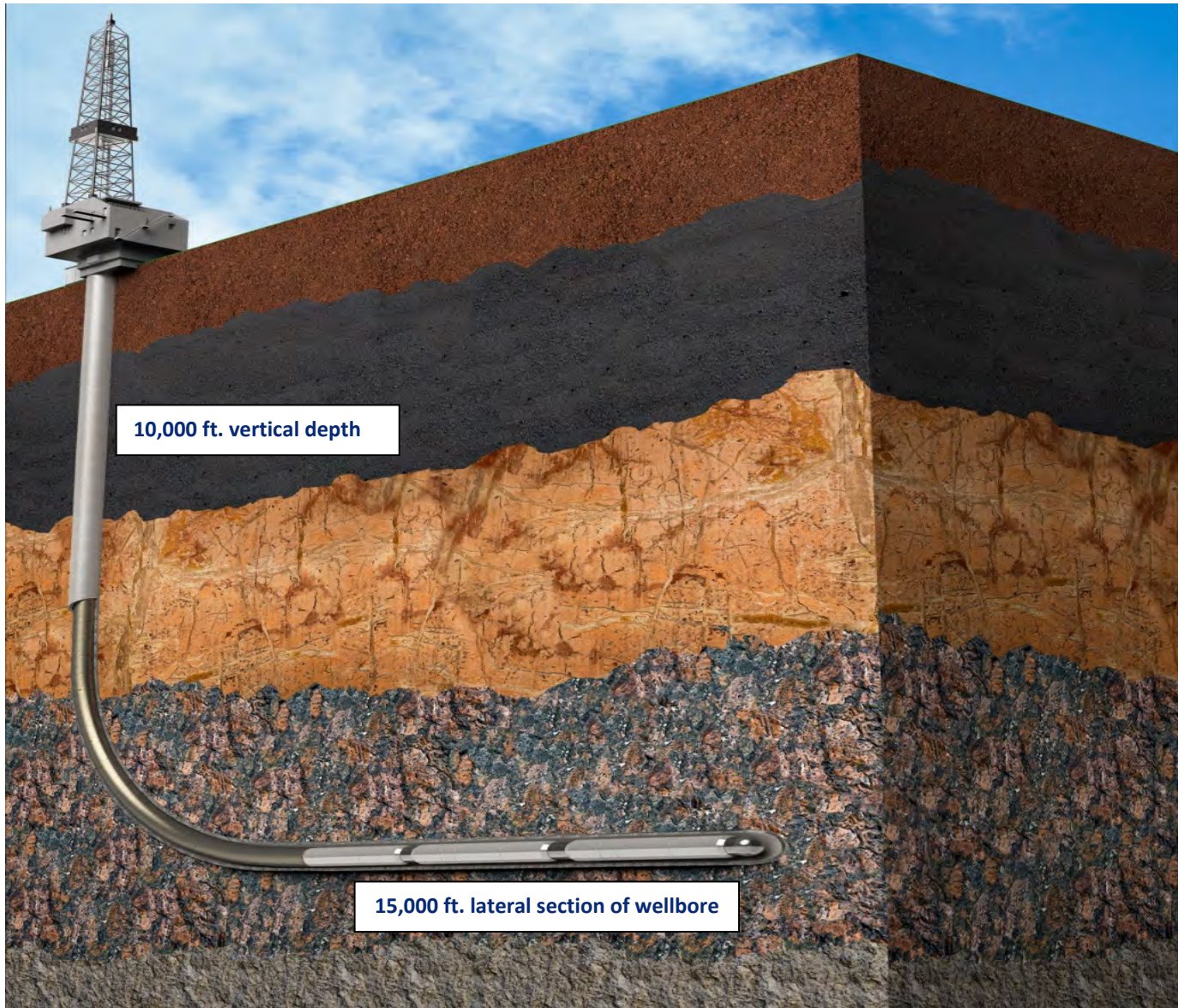
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[REDACTED]

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Response to U.S. Department of Energy Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities

3 March 2022



Company: NuclearSAFE Technology LLC.

Contact: Dr. Henry Crichlow PhD. PE, CEO, NuclearSAFE.

Address:

Phone:

Email:

Website: www.nstusa.net

IMPORTANT NOTICE

NuclearSAFE Technology LLC retains all rights to its methodologies, knowledge, intellectual property, know-how, and technical data that are discussed, illustrated, and provided in this Response to the *Request for Information* by the United States Department of Energy.

Topic Area and Question Covered in this Report Section:

Area 3:

Interim Storage as Part of a Waste Management System

Question 4:

What other issues should the Department consider
in developing a waste management system?

Part I

Respondent: NuclearSAFE Technology LLC

Address:

[REDACTED]

Phone:

[REDACTED]

Contact:

Dr. Henry Crichlow

Email:

[REDACTED]

Section 1

RFI Response

Area 3: Interim Storage as Part of a Waste Management System

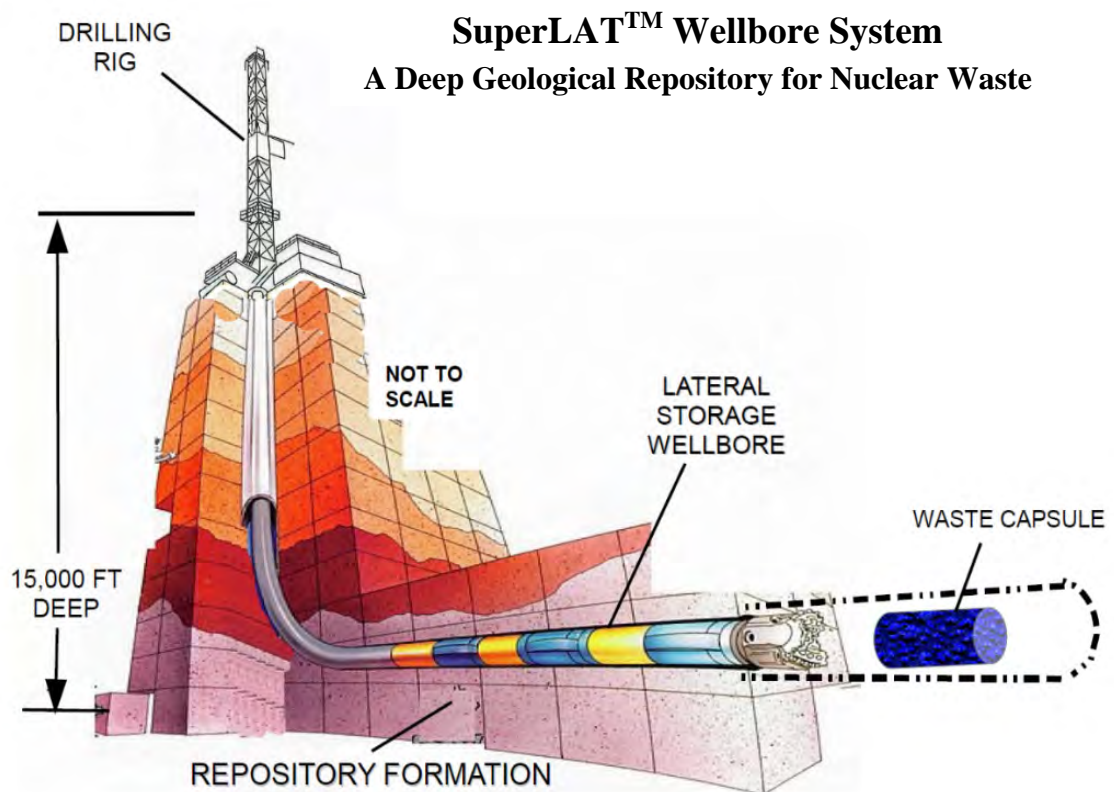
Question 4: What other issues should the Department consider in developing a waste management system?

SECTION 1:

Introduction:

In order to understand what other issues should be considered, it is first necessary to fully understand the total range of problems associated with the U.S. Department of Energy (USDoE) program for disposal of high-level radioactive waste (HLW), including spent nuclear fuel (SNF). This section of the response to the *Request for Information* focuses on perceived problems, and it also addresses the major difficulties facing the USDoE in successfully implementing its current HLW management program.

Challenges that currently plague the industry are clearly identified in this section, closely accompanied by observations that point to the means and methods that can provide safe, effective solutions to these seemingly-intractable problems. It is critical that the USDoE take a closer look at other, novel ways to develop deep geological repositories that would provide better protection for HLW stored or disposed of in the subsurface, and which would also minimize surface accumulations of newly-produced HLW.



Today, the high-level nuclear waste industry has focused almost single-mindedly on the “near-surface mined-tunnel” repository (**NSMTR**) approach for the long-term disposal of HLW, e.g., Yucca Mountain in the U.S., the DGR in Canada, and the KBS in Europe. All of these systems have real (or perceived) major environmental, scientific, economic, and/or political problems.

Nevertheless, there is an engineering solution that can be implemented within a few years, and that is the **SuperLAT™** wellbore. This technology was researched, developed, and patented in the 1990s (U.S. patent 5,850,614; Crichlow; 1998; see *Figure 1a*). Moreover, this technology was also presented by Dr. Henry B. Crichlow at an environmental conference in Regina, Canada in 2009. Therefore, a working system *has already been developed* that will consist of deep lateral wellbores that can be engineered in *closed* geological basins, and which will provide sufficient operating volumes for safe, long-term sequestration of multiple, retrievable capsules containing HLW (see *Figures 1b, 1c, 1d, and 1e* below). Wellbores are distinctly different from boreholes.¹ Boreholes are just “holes” in the ground. In stark contrast, a wellbore is a carefully-engineered mechanical system constructed within a deep geological formation, which provides a secure operating volume, and which is implemented by installing multiple concentric barriers consisting of high-strength steel alloy casing, with the annuli outside the casing filled with impermeable, high-quality cement, and then sealed with a preventative media to provide a reliable closed structure for long-term SNF storage and/or permanent disposal.

Since the 1970s, lateral wellbores have formed the backbone of the international upstream oil and gas industry, and millions of feet of lateral wellbores have been drilled in every kind of conceivable natural environment, – while still being in complete compliance with very stringent environmental regulations. With this innovative technology, it is now possible to drill and “complete” an SNF disposal system in a completely-isolated rock zone within a deep geologic formation having a vertical depth of more than 10,000 feet below the surface, and with the lateral section of the wellbore precisely drilled another 15,000 feet within the isolated geologic zone, i.e., more than 25,000 feet total measured depth. In fact, with current, state-of-art, extended-reach drilling technology, it is now possible to drill to measured depths that exceed 40,000 feet. These kinds of vertical depths below surface are clearly *below any near-surface freshwater aquifers*. Furthermore, many of these isolated geologic formations can be definitively shown by radioisotope and other geophysical methods to have remained *completely undisturbed* for tens of millions and even for *hundreds of millions of years*. Obviously, this technology will not require something such as the difficult-to-install titanium drip shield “umbrellas” (which will be emplaced after HLW disposal) to mitigate groundwater seepage into the Yucca Mountain disposal tunnels, followed by subsequent aqueous fluid migration into the freshwater aquifer located below the disposal tunnels.

There are two objectives of this section of the USDoE *Request for Information*:

- To provide the USDoE with a comprehensive look at the nuclear waste industry program, as it exists today, by focusing on the problem areas which need to be addressed.
- To provide the USDoE with valuable insights and pertinent information about available technologies and operational means/methods that can effectively and economically dispose of HLW, and which would allow increased development and use of nuclear power plants as a key component of the worldwide efforts to lower CO₂ emissions to combat climate change.

¹ See the comments in the box at the top left-hand corner of page 32 (*Deep Borehole Disposal*) of *Commercial Spent Nuclear Fuel: Congressional Action Needed to Break Impasse and Develop a Permanent Disposal Solution*; September, 2021; U.S. Government Accountability Office (GAO): <https://www.gao.gov/assets/gao-21-603.pdf>.

The information provided herein is demonstrative of the technology which can easily be shown to be superior and cheaper, and which can be readily implemented in a matter of months rather than in decades, – at a considerably-lower cost than any other types of HLW disposal systems.

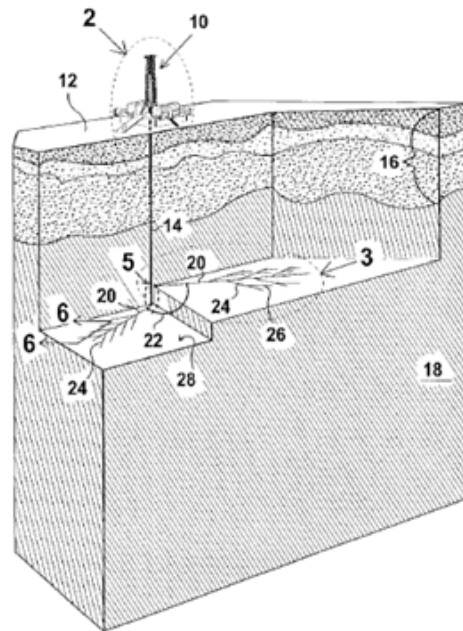


Figure 1a: The SuperLAT™ Foundational Patent 5,850,614 (1998)

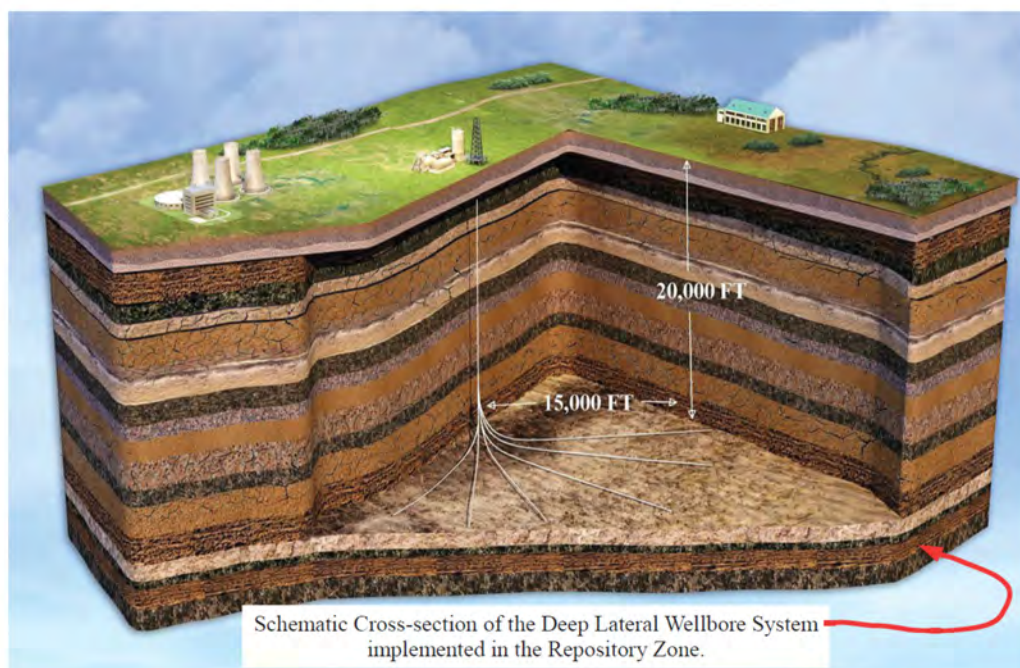


Figure 1b: 3-D View of Multiple SuperLAT™ Wellbores

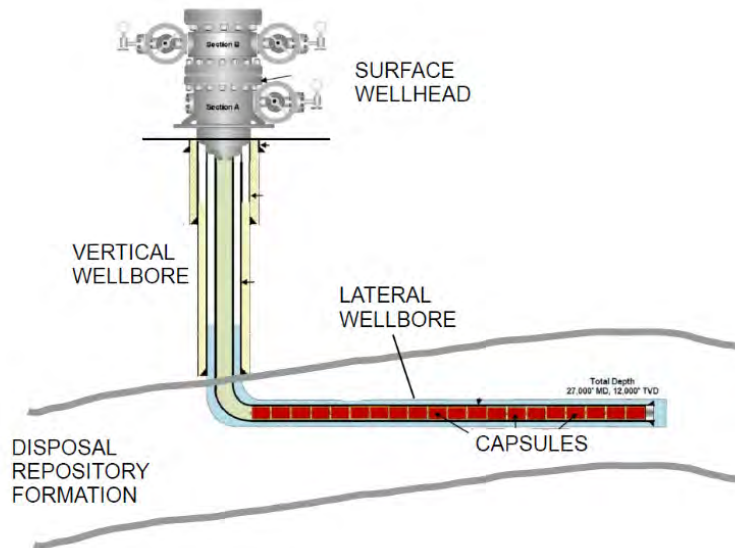


Figure 1c: The SuperLAT™ with Waste-Capsules

Figure 1d is a photograph of a surface marker placed in a pristine area of the Carson National Forest in northwest New Mexico. This small marker at this remote site is the only indication that a massive 29-kiloton nuclear device was detonated inside a wellbore at a depth of 4,227 feet below surface, in order to stimulate natural gas production during Project Gasbuggy back in 1967. Similarly, each of the lateral wellbores for the **SuperLAT™** HLW disposal system would have some kind of permanent marker indicating that millions of pounds of high-level (but non-fissile) radioactive waste is buried at depths exceeding 10,000 feet below surface.



Figure 1d: Surface Marker for 29-Kiloton Nuclear Device

Today, innovation is needed in HLW disposal systems. A shallow one-shot, multi-billion dollar, near-surface, mined-tunnel system that cannot be implemented in less than 20 years is **not** the answer.

INNOVATION DOES NOT LOOK LIKE A MINE EXCAVATED AT 500 METERS BELOW GROUND NEAR THE WATER TABLE IN FRACTURED ROCK

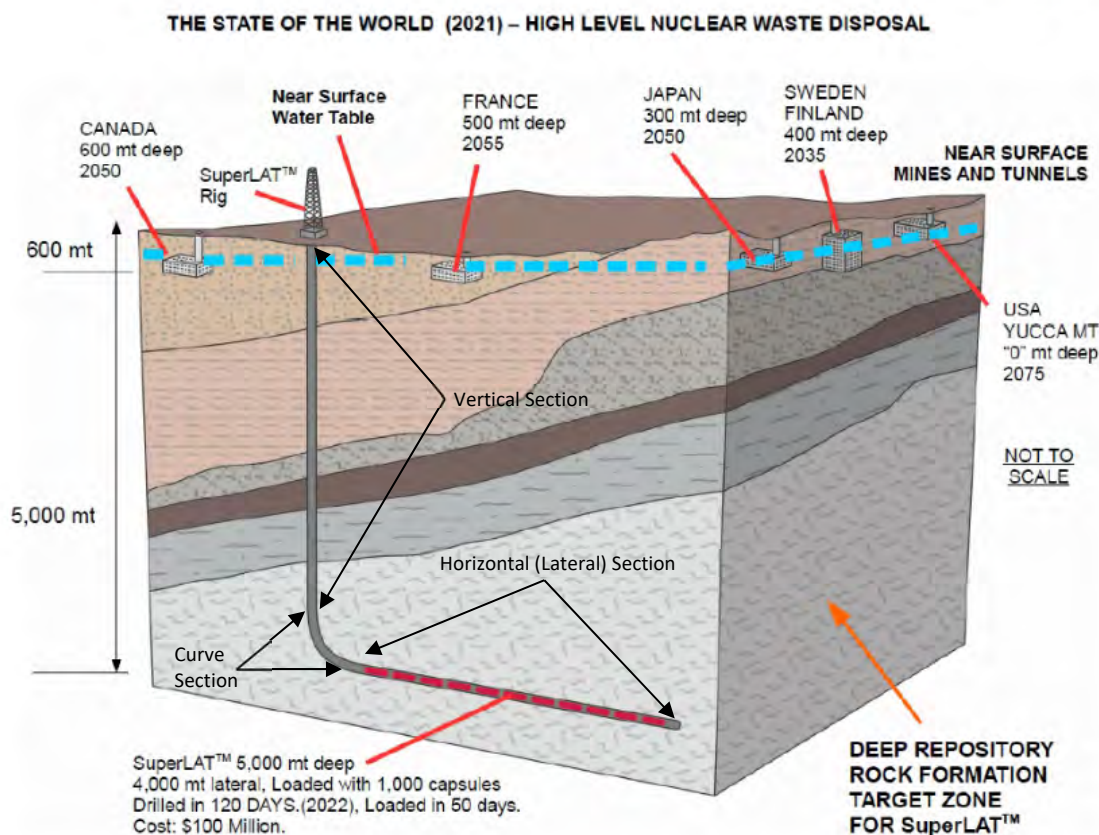


Figure 1e: Proposed Disposal Projects for HLW Today

Turning the Corner Downhole:

The **SuperLAT™** wellbore system (Crichlow, 1998) utilizes various embodiments of oilfield technology and the associated support industries and infrastructure of the international drilling industry, in order to provide an effective method for the disposal of high-level radioactive waste (HLW) in deep geologic formations. One of the key features of nearly every technological innovation is that it is based on (and builds on) existing technology. Some of the most rapid and productive advances in many of today's industries were the result of repurposing tried-and-true, technologically-advanced systems and methods from another industry. That is one of the main reasons why the **SuperLAT™** wellbore system is an eminently viable option for HLW disposal.

Some disposal groups have suggested and applied current vertical borehole drilling systems to emplace high level waste as shown in the *Sandia* report ² (see *Figure 2* below).

² *Sandia Report: Deep Borehole Disposal of High-Level Radioactive Waste*; Sandia National Laboratories; 2009 (SAND2009-4401); <http://large.stanford.edu/courses/2018/ph241/tuayev-deane1/docs/sand-2009-4401.pdf>

The, large-diameter, vertical wellbore approach has several major drawbacks. First of all, a vertical wellbore is extremely limited in HLW capacity since only the bottom section of the wellbore will be deep enough below the surface to effectively sequester the waste so that it is securely and safely isolated. That means that up to 80% of the wellbore capacity will contain no waste; thus, it is totally useless – but still very costly to drill.

Second, finite element analysis and other calculations have indicated that, by stacking 400 (or more) capsules vertically above a thin walled, but high-density capsule or other type of cylindrical container at the bottom of a wellbore, massive helical or sinusoidal buckling will likely be induced due to the extremely-high compressive loads exerted by the weight of several hundred heavy capsules stacked on top of the bottom capsules. Permanent capsule deformation caused by these high compressive loads would quickly compromise the structural integrity of the capsules; and any loss of integrity of the waste-capsules or containers is a serious issue that could easily result in various radionuclides (which are still highly-radioactive) migrating away from the compromised capsules or containers in a relatively short period of time after emplacement.

On the other hand, if the **SuperLAT™** wellbore technology is utilized, the very heavy, high-level waste-capsules will be emplaced in the lateral (horizontal) section of a wellbore. Therefore, these long cylindrical capsules will be lined up, end-to-end in the horizontal sections, *resting flat on their sides*. There cannot be a vertical weight component regardless of the number of capsules that are disposed. The capsules will behave exactly as if they were lying flat on their sides on the *floor of a warehouse*. Capsule deformation cannot occur due to compressive loads on the capsules.

Turning the corner smoothly from a vertical section to a horizontal section of a wellbore is possible. After decades of continuous improvements, the current state of downhole directional drilling technology is nothing short of “rocket science.” Directional control is conducted using either the Earth’s magnetic field or its rotation to determine the precise azimuth of a wellbore trajectory. The telemetry between instruments on the surface and downhole directional tools are achieved by transmitting information with mud pulsar signals and/or electromagnetic signals. Advanced rotary steerable system (RSS) directional drilling tools are being increasingly used throughout the world. Moreover, several robust lines of RSS directional drilling tools have been developed that use either (a) “push the bit” technology or (b) “point the bit” technology. When combined, these state-of-art technologies allow multiaccess control of the drill bit in a continuous manner. By so doing, any conceivable wellbore trajectory in three dimensions can be maintained.

The preferred **SuperLAT™** technology utilizes a dynamically-controlled, RSS directional drilling system. This system, guided by artificial intelligence, using rugged, remotely-controlled mechanical devices, is capable of drilling a gun-barrel-smooth curve section and then maintaining a preselected horizontal trajectory, – precisely, accurately, and repeatedly, – for more than three (3) miles within a very narrow target zone enclosed by an impermeable geological formation suitable for HLW disposal.

Modern RSS directional drilling systems rely on 21st-century instrumentation, including rapid telemetry systems, downhole computer CPUs, accelerometers, magnetometers, gyroscopes, etc.,

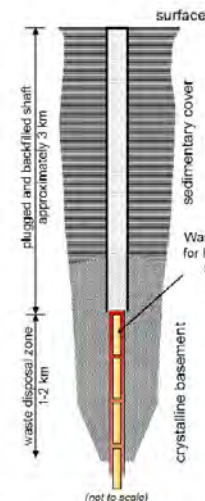


Fig. 2: Vertical Borehole Disposal (Sandia)

working harmoniously under extreme pressures and temperatures to provide navigational information to precisely drill a horizontal trajectory in the repository formation. These navigational systems include and incorporate multiple feedback sensors, navigational sensors, microcontrollers and/or microprocessor assemblies for processing the combined inputs, downlink/uplink channels between the surface and the downhole directional tools which allows updating the tool and/or re-programming the tool from the surface so as to adaptively establish or change the desired target trajectory “on the fly.”

Further advancements have allowed directional tools to simultaneously perform – (all while efficiently drilling ahead and maintaining a very precise wellbore trajectory) – multiple geologic formation evaluation measurements, such as gamma ray detection, neutron porosity, sonic porosity, shallow/deep formation resistivity, wellbore imaging, bulk rock density data, look-ahead / look-around sensing, and ultrasonic caliper measurements, as well as the acquisition of various types of rock mechanical values.

An additional capability of this **SuperLAT™** operation is the very effective utilization of advanced electronics installed in downhole directional tools, with non-volatile memory that allows logging while retaining the data and/or logging while transmitting the data, or simply transmitting in real time or on a delay by using buffer memories. This allows detailed, accurate wellbore surveys and other data to be acquired that enable precision in geological steering capability so that the RSS directional drilling tools can be effectively optimized when drilling the current disposal well or to make any needed adjustments or modifications for drilling operations of subsequent disposal wells. This process is shown schematically in the graphic of *Figure 3*.

The potential level of operational expertise, capability, and repeatability that the **SuperLAT™** wellbore technology can achieve is best illustrated by recent, real-life events. For example, all 28 of the horizontal wellbores that were drilled in the U.S. Williston Basin from 2019 to mid-2021, all of which had a minimum vertical depth of 10,000 feet, as well as a minimum lateral length of 13,500 feet, are shown below in *Figure 4*. It should be noted that every one of these wells were drilled in less than twenty (20) days at a cost considerably less than \$5 million USD per well.

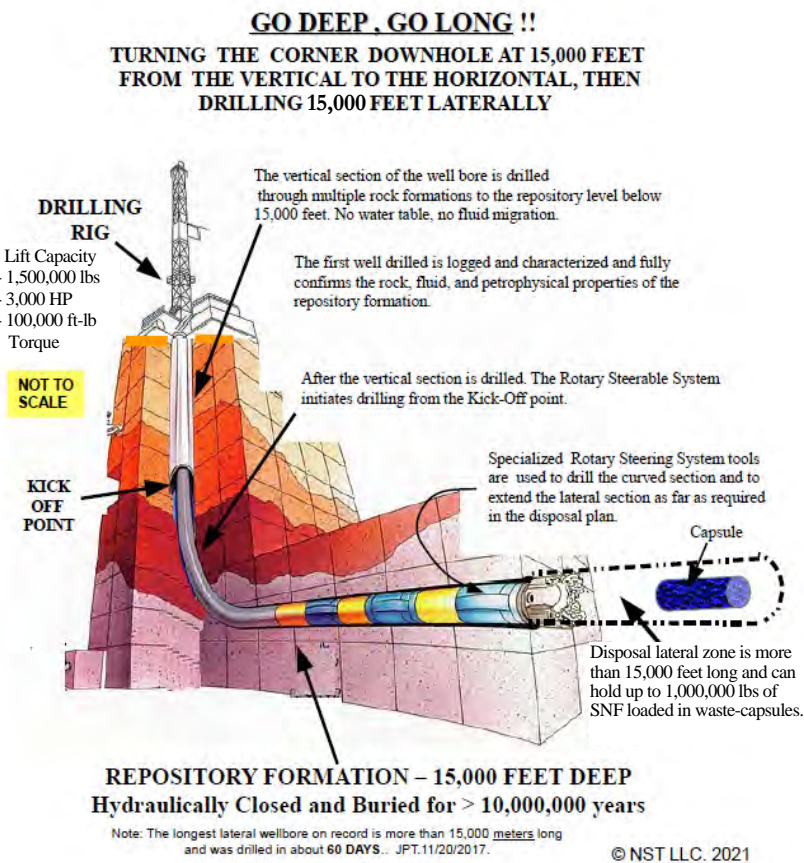


Fig. 3. Turning the Corner Downhole

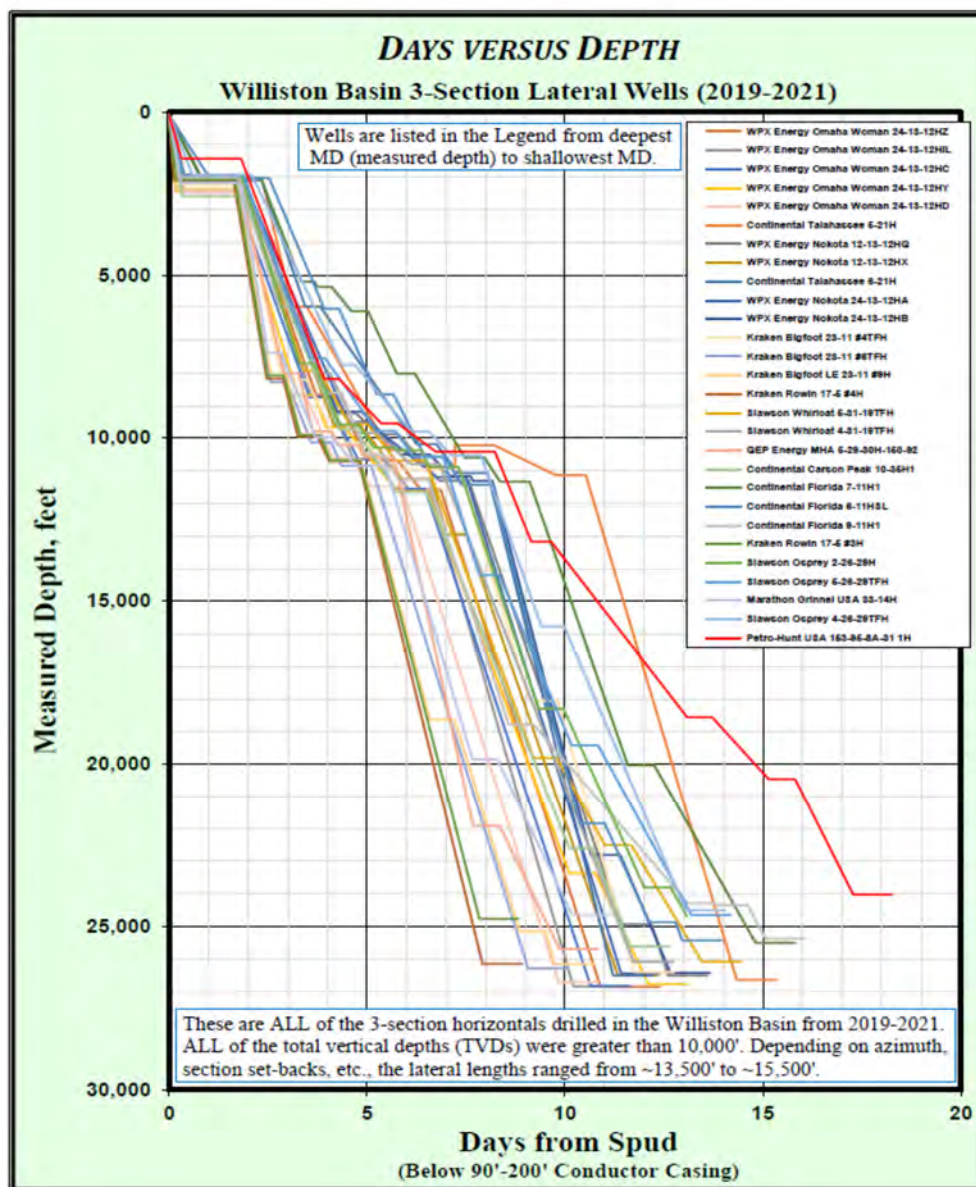


Figure 4: Time (in Days) to Drill Lateral Wellbores (2019-2021)

Yucca Mountain – the US approach to HLW Disposal in near surface tunnels:

By the mid-1990s, the U.S. nuclear industry was confident that problems associated with disposal of the growing inventories of nuclear waste had been overcome and there would soon be an operational geological repository to bury the waste so that it could be safely isolated for millions of years. The main tunnel at Yucca Mountain was designed to be excavated into the volcanic rock starting at ground level, with the tunnel sloping downward to the proposed HLW emplacement level. In 1994, the U-shaped main tunnel, which is 5 miles long with two entrances at surface, was bored by a 3,800 HP tunnel boring machine purchased by the government. The HLW disposal tunnels still have *not* been excavated.

In fact, the Yucca Mountain Project ran head-on into an impenetrable barrier of problems, which to this day have not been resolved – even after an expenditure of an estimated \$20 billion USD. Yucca Mountain is a prime example of the inherent problems involved in implementing a mined-tunnel geological repository that is near the Earth’s surface and *within reach of the water table*.

As just one example of the last-ditch engineering efforts that have been made over the last three decades to try to salvage the Yucca Mountain Project, engineers engaged in the project have designed titanium drip shields as “*umbrellas*” to cover and protect the stored HLW material. The idea is that these titanium drip shields will protect the HLW capsules from the now-foreseeable (but previously-unplanned) seepage of groundwater from the surface down to the HLW disposal tunnels and further downward migration of these aqueous fluids into the underlying freshwater aquifer. It is unclear how this expensive after-the-fact or “band-aid” solution could be safely implemented years after the HLW has been stored in the tunnels, since by the time that the drip shields would be installed, the total volume of HLW would have generated a highly-radioactive ambient environment inside these tunnels. As shown by the Chernobyl experience, high levels of radioactivity would almost certainly complicate any future underground activities, including the proposed installation of the titanium drip shields.

Yucca Mountain has inherent geological, hydrogeological, mechanical, environmental, legal, political, economic, and operational problems. After decades of funding, the U.S. government has effectively deactivated the Yucca Mountain Project, in light of all of the technical issues, combined with years of strong public opposition, including more than 200 ongoing legal proceedings and litigation efforts generated by the state of Nevada, as well as other interested groups and individuals. However, until the 1987 amendment to the Nuclear Waste Policy Act (NWPA) of 1982 is repealed, the sole use of Yucca Mountain as a permanent repository for HLW is *the law of the land*. Unfortunately, up until now (2022), the U.S. Congress has not given any indication that they will change the law of the land. Even though Yucca Mountain is dead for all practical purposes, it remains a blockade preventing forward progress for any kind of permanent HLW disposal process – at least until this law of the land is changed. Making this change was one of the key recommendations in a recent report by the U.S. Government Accountability Office (U.S. GAO) in September, 2021.³

Figures 5 and Figure 6 below are from U.S. government publications about Yucca Mountain.

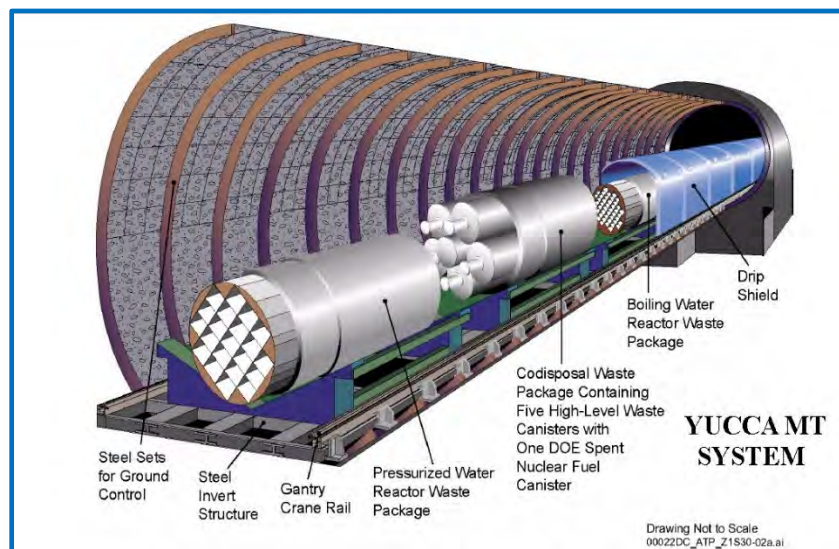


Figure 5: Yucca Mountain Near-Surface Mined-Tunnel System

³ *Op. Cit.* (footnote 1). U.S. GAO Report (September, 2021).

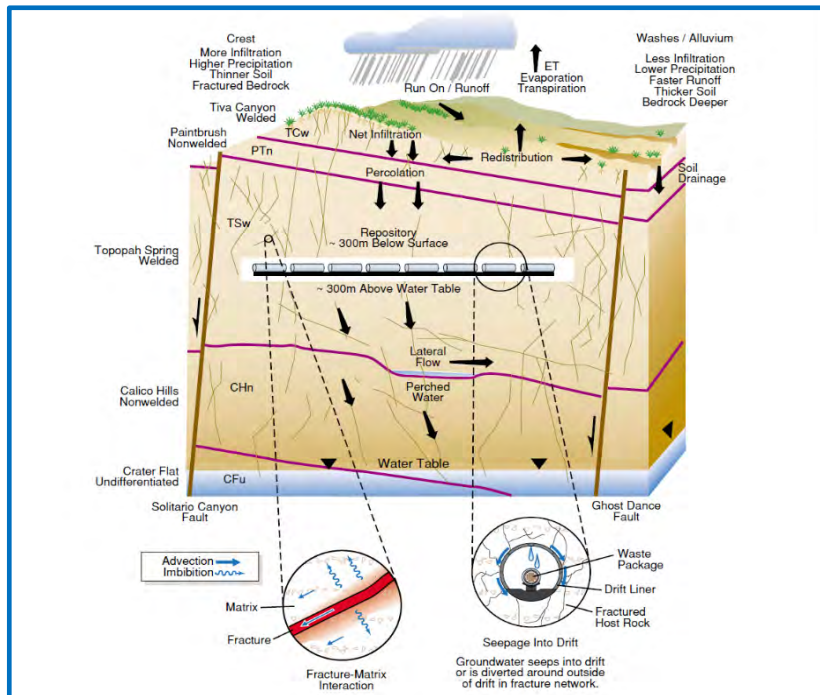


Figure 6: Migrating Waters in Yucca Mountain Due to Rainfall

Deep Geological Repository (DGR) Comparisons:

The near-surface mined-tunnel repository (NSMTR) excavated systems can be summarized by the following methodology:

- Site a preferred location based on a multi-step program adopted by all countries in a process that lasts several years. The preferred site should be based on political, public and social acceptability, geological evaluations, rock properties, transportation availability, among other considerations.
- Estimate excavation costs at thousands of dollars or more per cubic meter. Depending on HLW storage volume needs, the DGR costs range from \$4 billion to \$30 billion USD.
- Excavate millions of cubic meters, to form near-surface placement rooms capable of storing large volumes of HLW with expensive massive tunnel boring machines and equipment.
- Build a *town on the surface* and a *village underground* to fully develop and manage the HLW disposal operation processes, house staffing, HLW materials handling, power supply system, and required transport equipment and maintenance.
- Measure development times *in decades* to excavate and provision the mined-tunnel system.
- Fabricate specialized capsule systems with expensive, exotic metals and protective devices to contain and isolate the HLW capsules for a very long period of time (at least 10,000 years) from the near-surface freshwater table, migrating aqueous fluids, and percolating rainfall.

- Transport capsules to the repository site utilizing massive transport casks/containers via selected limited land or rail routes.
- Off-load waste HLW capsules at the mined-tunnel site and position and emplace the HLW capsules in the placement rooms whose walls have been *superficially* treated to prevent fluid migration into/from the repository, as well as contamination of any of the excavated entry/exit/ventilation openings in the mined-tunnel repository.
- Backfill the placement rooms containing the capsules with bentonite clay or other material.
- Set up equipment underground and at the surface to monitor the radioactivity for all time.
- Guard the tunnel entrances and warn all humankind from intrusive activity for millennia.
- This is a single “one-shot” selection process. In the event that the DGR site location is deemed unsuitable years after implementation, there is no alternative. Billions of dollars will have already been lost. This is exactly what has occurred on the Yucca Mountain Project.

The **SuperLAT™** technology for HLW disposal may be summarized as follows:

- Site a preferred location based on (a) 4D (spatial and temporal) geophysical analyses, (b) structural and stratigraphic analyses, (c) “Big Data” basin-wide core analyses of various petrophysical rock properties, (d) radiometric and other geophysical dating methods, as well as geochemical analyses, of geologic strata and in-situ rock pore fluids, (e) economic data, (f) political exigencies, and (g) transportation limitations.
- Drill the selected site with easily-mobilized deep drilling rigs capable of drilling more than 15,000 feet vertically and then laterally more than 15,000 feet, for a total measured depth (TMD) of up to 30,000 feet. The capability of 3,000 HP (or larger) drilling rig with 1,500,000 lbs (or greater) hook-load capacities, can provide a capsule-ready, deep geologic repository that can be drilled in less than *120 days*, **not** 20 years as envisioned for mined-tunnel systems.
- Utilize a new type of HLW capsule that is retrievable, compact, cylindrical, tubular, and designed for longevity by utilizing long-term sequentially protective systems, which can easily be transported to the disposal site, and which can readily be emplaced in deep lateral wellbore systems with existing, properly-shielded robotic surface equipment.
- Transport the pre-assembled HLW capsule to the **SuperLAT™** site inside a novel type of patented capsule transport container system. Current transporters are expensive, extremely-heavy, massive, with HLW transport mainly restricted to railroad cars or limited to overweight truck loads, which cannot travel on most of the nation’s highways. As shown in YouTube videos, these existing containers are designed to be *indestructible in a train crash* but have only a very limited HLW capacity, and as a result, the high transportation expenses due to this cumbersome design represent a major drawback to improving the overall situation so that the HLW disposal process can move forward.

- Implement an automatic, robotic, robust materials-handling-system using modifications of state-of-art, but proven remote-controlled oilfield equipment, such as the presently-available and operational “*Automatic Roughneck*”. Similar devices and systems will be fully capable of (a) unloading the HLW capsules from overland transporters, (b) transferring the waste-capsules onto the drilling rig floor or platform, (c) concatenating several capsules into a string, (d) inserting the string of cylindrical capsules into the wellbore, where after the capsule string has been inserted into the vertical wellbore section, the capsules can then be “landed” or emplaced in the lateral section of the **SuperLAT** system.

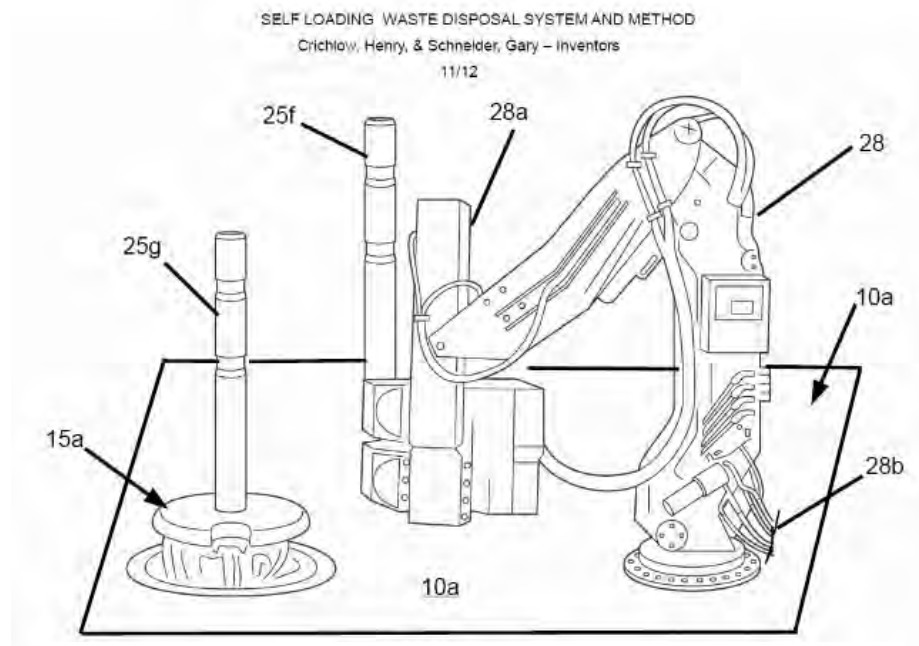
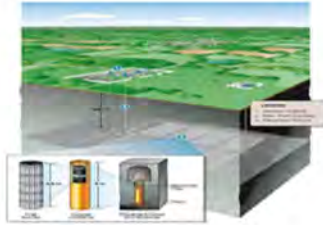


Figure 7: Automatic Patented Robotic Surface Capsule Operations

- Seal the *retrievable* capsules in the lateral wellbore system and immerse them in a specialized medium which has been demonstrated in certain geological formations to have remained protective and non-degradable for millions of years.
- There is no need to build a *town on the surface* and a *village underground* to fully develop and manage the HLW disposal operation. The only requirement is an automated, streamlined, clean, and functional delivery apparatus and material transfer system. No capsules will be stored on the surface, and the system will operate as a first-in, first-out (**FIFO**) delivery mode whereby transported capsules can be sequestered within minutes of arrival onsite at the disposal location. This type of complex automation process is routine in the oil and gas drilling industry and in other innovative industries today.
- Maintain operational redundancy and HLW disposal backup by implementing multiple sites at separate regional locations operating simultaneously, in order to provide for disposal of the HLW from distinct locations across the country. Program operations are only limited by the number of available, suitable-sized drilling rigs and trained drilling teams at any given time.

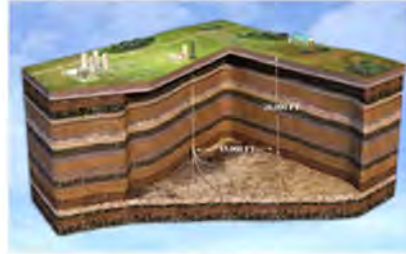
COMPARATIVE ANALYSIS

Canada DGR Disposal



BILLIONS of Dollars
 Questionable Geology
 Questionable
 15 Year Wait for Deployment
 Easily retrievable in a mine
 Groundwater @ 200 ft, a Major Concern
 Moderate, underground mine
 Poor, No containment of fluid loss
 Moderate, containerized
 (Yucca mt) Major Concern, **83 MT/acre**
 Unknown
ZERO, None, **SINGLE** site, all or none.
 Thousands of MT Capable
 Capable of storing LLW.
 Poor, Shallow vertical mine shaft access
 Poor, easy vertical mine access.
 Easily accessed vertically
 Poor, Major State & Local Concern
 Possible radiation problem
 Large volumes, Major health, safety concern
 Poor understanding & acceptance
 Poor understanding & acceptance
 Massive Surface mining equipment
 "Small town" to provide services
 Monitoring of radionuclides
 Annual Equipment Replacement

SuperLAT™ Deep Repository



Cost	MILLIONS of dollars
Reliability	Maximum Geological Reliability
Technical Merit	Processes Proven Worldwide by 1,000s wells.
Timeliness	Deployable NOW in months
Retrievability	Excellent using well service procedures
Groundwater Problems	Non-Existent, no ground Water
Natural Barriers	Excellent 20,000 feet thick overburden
Geologic Barriers	Excellent, 100% containment of loss
Engineered Barriers	Excellent- waterproof, steel, cement, clay
Heat Load	Minimal Heat load < 1 MT/acre
Autocriticality	Minimal fission possibility
Redundancy	Excellent- MULTISITE , dispersed sites
High level waste	Excellent, > 1,000 MT/site
Low level waste	Excellent for LLW storage
Theft-Resistant	Impossible to steal, 2 years to re-enter wellbore
Diversion-Resistant	Impossible to divert, extremely hard to reach
Reuse-Resistant	Impossible unless authorized entry
Environmental	Excellent - 20,000 feet deep, Closed, Isolated
Radiation Safety	Isolated Deep Basins - Nothing leaves zone
Personnel Health	Small quantities, 1,000 MT managed at a time
International Acceptance	Familiar Drilling technology, Easy to explain
Institutional Acceptance	Familiar Drilling technology, Easy to explain
Infrastructure needs	None, just a drilling rig
Underground needs	None needed
Monitoring	No migration from closed basin
Equipment Replacement	Zero replacement costs

Fig 8: DGR Comparison

The SuperLAT™ Capsule System:

The **SuperLAT™** waste-capsule system is designed differently than existing published waste-capsule systems. This novel capsule design will meet all of the requirements of a technology that focuses primarily on using deep rock formations for the primary barrier for isolation and ultimate protection of the HLW. The waste-capsule itself will be an effectively-designed, sufficiently-functional, lean vehicle that can (a) contain, (b) protect, (c) transport the SNF to the **SuperLAT™**

Deep Geological Repository (**DGR**) site, and (d) then be emplaced for either long-term storage or final disposal in the deep lateral wellbores that form the DGR.

Generally speaking, the design and manufacture of nuclear waste-capsule systems for nuclear waste disposal are governed by a number of key factors, such as, but not limited to: (1) shielding effectiveness; (2) structural integrity and durability; (3) ease of handling and transportation; (4) high-volume waste loading; (5) cost-effectiveness; (6) thermal performance; (7) human health and environmental protection and political acceptability; (8) regulatory requirements, and various combinations thereof.

The **SuperLAT™** capsule body utilizes an optimal combination of ultra-high-strength steel alloys (up to 150 ksi minimum yield strength) as compared to the limited-strength stainless steels (55 ksi) that are normally used in existing capsules. Furthermore, the **SuperLAT™** capsule employs an advantageous combination of features such as an internal protective media, a demonstrated means for passivating SNF containers made of metal alloys, and existing, fully-developed methods and means for successfully conducting *repeatable* retrieval/insertion operations for various downhole tools in existing deep lateral/horizontal wellbore systems.

During all operational phases, the management and disposal of high-level nuclear waste material is extremely risky. HLW is dangerously toxic for a long period of time. As a result, more effective radiation shielding materials and improved manufacturing techniques for waste containers and capsules are needed so that large amounts of HLW can be safely transported and disposed of effectively.

There is no perceived or plausible economic or technical necessity for massive, competent long-term shielding systems for nuclear waste-capsules, – as long as the quantity or level of required shielding and the shielding time is only that brief interval of time needed to accomplish the following:

- remove the SNF (i.e., spent nuclear fuel assembly) from the terrestrial surface pool,
- package the SNF,
- transport the SNF to the repository wellhead, and
- isolate the nuclear waste-capsule by “landing” or emplacing the nuclear waste-capsule inside a deep lateral wellbore in the deep geological formation of the repository.

Unless there are complications, the elapsed time for removing the package and transporting the nuclear waste-capsule may only require seven to ten (7-10) days, or possibly even less. Therefore, the nuclear waste-capsules can be optimally designed to allow safe transport in the relatively brief time period of only 2-3 weeks, which would include removal of SNF from the terrestrial surface cooling ponds, packaging the SNF in the nuclear waste-capsules, and transporting the waste-capsules safely to one of the deep geological repository surface wellheads. In the event of unintended delays, the nuclear waste-capsules can then be returned to some intermediate storage site or even to the original terrestrial surface cooling ponds for continued temporary storage.

One of the expected benefits of the novel waste-capsule design that will eventually be stored or permanently emplaced in the lateral wellbore sections of the **SuperLAT™** system is the fact that a neutron-absorption medium/layer can be mechanically designed and implemented to provide the necessary level of radiation protection, neutron slowdown, and neutron shielding, as may be required. This allows SNF to be removed from cooling pond storage, loaded into a waste-capsule, and transported to the long-term deep geologic disposal site for internment into the geologic repository, – while still providing the high level of safety and security required by law.

In other words, protection for a short, discrete period of time, as opposed to protection for a very long or indefinite period of time, is all that is necessary. In this embodiment, a just-in-time (JIT) design allows the quantity and quality of the gamma and neutron shielding to be designed (but not over-designed) to meet the real-world requirements of transport and protection of the HLW from surface storage in cooling ponds until the time when it is emplaced in a deep geologic repository.

JIT systems can use conventional transport systems, such as railroad cars, truck trailers without highway load restrictions, and/or on barge or other vessels that are already well-developed and have been available to the nuclear industry over the last 50 years and are fully operational today. In contrast, other types of capsules and cask systems used to transport SNF usually require massive equipment, such as specialized overhead cranes for loading/unloading at both the origin point and destination site, special highway transporters, permitted overland routes and limited rail access to final destinations.

The front door on the main vault of a bank obviously has a much more massive construction than a safe deposit box in that same bank. In an analogous manner, the HLW emplaced in a lateral wellbore in a deep, geologic repository may need to be at least 10,000 feet below the surface, under a rock column that is more than two miles thick, in order to prevent contamination of the Earth's surface for many thousands of years. On the other hand, the HLW waste-capsules themselves can be designed where they fully meet all of the safety standards required for transport – although, only for the very brief period of time that radiation shielding may be needed during terrestrial surface handling and transport.

Currently storing these SNFs on the terrestrial surface or in shallow burial systems in casks is expensive and costs millions of dollars per cask unit. Furthermore, these casks are exceptionally-large, reinforced concrete structures that are extremely heavy, extraordinarily difficult to transport, and require robust shielding and cooling systems, in order to minimize radiation and heat from the HLW that will be stored in them for years.

The existing HLW storage systems on the surface are rudimentary as shown in *Figure 12a*. These systems usually include a reinforced concrete pad or gravel pack, even though these simple operations result in a very profitable business model for the storage companies. Hundreds of millions of dollars are expended annually to implement and maintain these interim HLW storage operations. Nevertheless, these operations *are not* a solution to the problem of HLW disposal. In addition, each stored surface cask provides a potential source of failure due to corrosion, accident, or malfeasance. Hundreds of casks on the surface amplify those points of failure.

In contrast to the DGR systems that could be provided by implementing the **SuperLAT™** technology, these terrestrial surface or near-surface operations do not have the benefit of many thousands of feet of solid radiation-absorbing rock formations between them and the Earth's biosphere or freshwater aquifers that are near-surface features throughout the world. The current **SuperLAT™** technology, methods, and various features disclosed herein, utilize novel uses of proven operational processes, information, and knowledge to design and implement the nuclear waste-capsule systems that will allow an efficient utilization of material, optimize operating time, and minimize the overall cost of long-term storage/disposal of the high-level radioactive waste.

In one embodiment of the **SuperLAT™** technology capsule system, borated stainless steel may be used as a neutron-absorbing liner/layer in the nuclear waste-capsule storage containers. However, borated steel has weak mechanical/metallurgical properties, and it has the potential for cracking and breaking, rendering it with a weak shielding capacity over a prolonged period. The **SuperLAT™** nuclear waste-capsule system discussed herein has an outer steel wall, with considerable tensile and compressive strengths. This type of high-strength steel alloy has typically

been used in the deep oil and gas drilling industry, where minimum yield strengths in excess of 120 ksi are routinely used. Therefore, this outer, high-strength steel wall will provide the sufficient axial and compressive strengths needed for the nuclear waste-capsules and minimize the negative effects due to any structural deterioration of the capsule system. As a result, the HLW that has been loaded into the capsules will be securely isolated for a considerable period of geologic time.

The bombardment of borated stainless steel by neutrons emitted by the radioactive waste will eventually reduce the steel's shielding efficacy, making it unsuitable for shielding in the long term. However, by the time the neutron absorption efficacy has significantly decreased, the nuclear waste-capsule will be emplaced in the long lateral wellbores, surrounded by multiple concentric layers of steel and concrete, deep inside the solid matrix of the geologic repository at depths of more than 10,000 feet below ground level in rock formations which are geologically closed. See *Figure 9a*, *Figure 9b*, *Figure 10*, and *Figure 11*.

This novel waste-capsule system also utilizes a passivated copper carrier system that provides a layer of corrosion-resistant material that complements and increases the protective period of time that the SNF assemblies can reside undisturbed inside the carrier system and the steel capsule body.

The **SuperLAT™** waste-capsule system advantageously provides improved materials and simple techniques that will offer better, more durable, and more cost-effective gamma and neutron radiation shielding in these patented nuclear waste-capsule systems. The system's improved materials and techniques also enhance the safety of handling, transportation, and long-term disposal containment of HLW, as well as providing protection for human health and the environment before, during, and after the emplacement and long-term storage/disposal of the HLW capsules.

An additional benefit to the nuclear waste industry that is addressed by this capsule technology is the fact that, in at least one feature of this waste-capsule system, intact fuel rod assemblies, i.e., "non-disassembled" fuel rod assemblies, may be loaded into the waste-capsules directly from the storage cooling ponds, with only minor alterations to existing procedures or slight modifications to the equipment at the nuclear facilities or other storage sites. Therefore, by being able to load intact spent nuclear fuel (SNF) rod assemblies, there is no need to reinvent equipment to manage the enormous quantities of fuel rod assemblies that are currently stored at various surface facilities. This is a major economic, safety, and operational benefit.

Moreover, this waste-capsule system allows HLW that has been prepared (or could be prepared by future methods) into other manageable waste product forms that can also be loaded into simple variations of the waste-capsule system that have been anticipated by the technology described herein. These include, but are not limited to, various types of vitrified or ceramic waste product forms.

The **SuperLAT™** capsule system includes a patented attachment/retrieval system with well-engineered devices and operational methods that will allow safe and secure retrieval of the hundreds of capsules that may have been previously sequestered in the lateral wellbores – even after a period of as many as 50-100 years have passed since the capsules were initially emplaced. This retrieval process is a novel feature of the waste-capsule system. It should be noted that somewhat similar types of systems have been demonstrated thousands of times in the oil and gas industry, whereby these systems are used to set and retrieve downhole tools, packers, pumps, and other devices that are needed in production operations, including those in deep lateral wellbores. The novel capsule retrieval system is shown in *Figure 9c*.

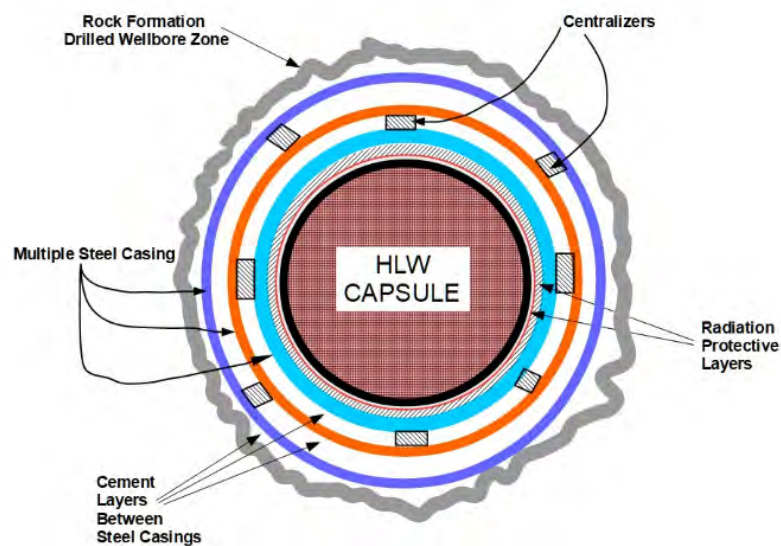


Figure 9a: Cross-Section of Single Capsule in Lateral Wellbore

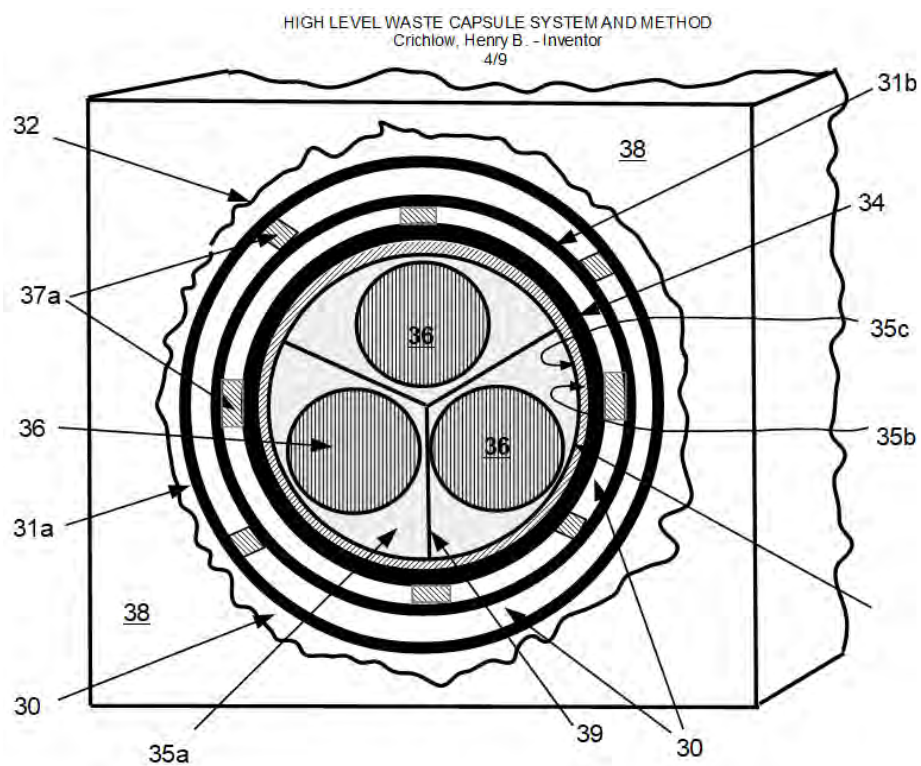


Figure 9b: Cross-Section of Multiple Capsules in Lateral Wellbore

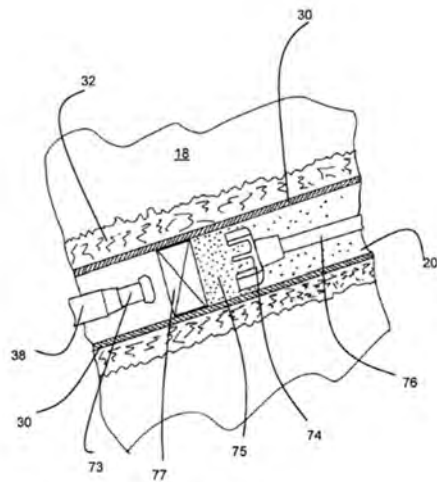


FIG 11

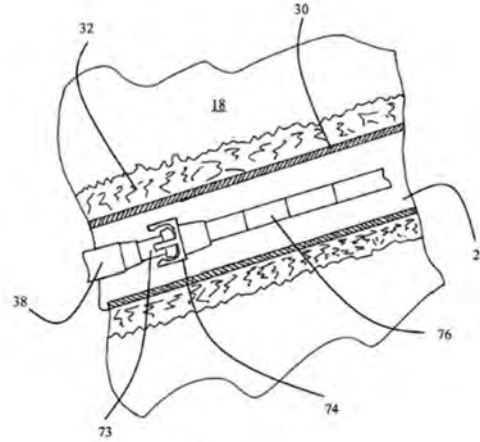


FIG 12

Figure 9c: Capsule Retrieval from Lateral Wellbore

HIGH LEVEL NUCLEAR WASTE DISPOSAL CAPSULE

Crichlow, Henry – Inventor

8/16

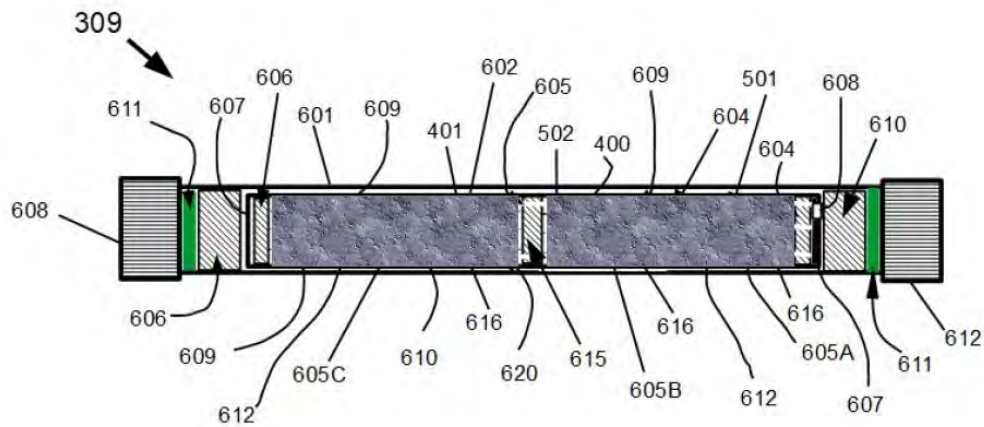


Figure 10: Waste-Capsule for BWR and PWR Spent Nuclear Fuel (SNF) Rod Assemblies

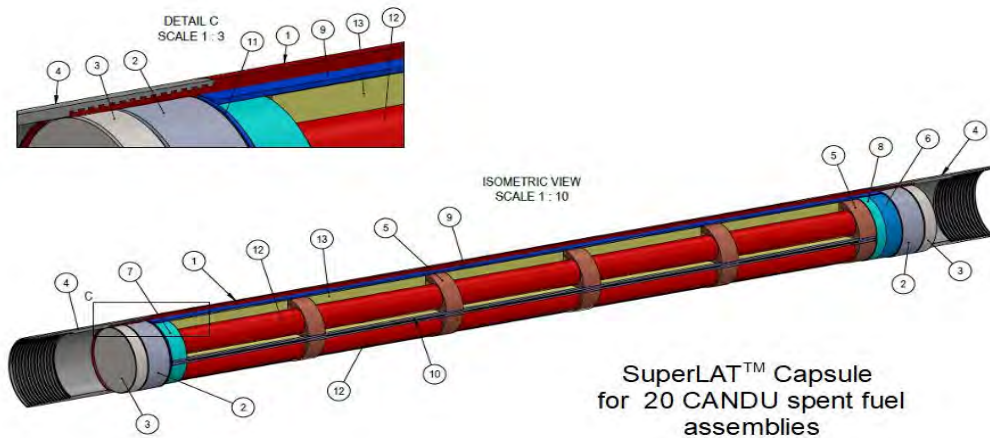


Figure 11: Encapsulated Canadian CANDU Spent Nuclear Fuel (SNF) Rod Bundles

High-Level Radioactive Waste Transportation:

A major segment of the HLW disposal industry is the transportation of the waste and particularly the waste-capsules containing the SNF assemblies. In general, the current systems use a set of cylindrical-shaped casks, horizontally or vertically aligned, that may be commissioned and licensed for storage, transport, or both. These casks are designed to protect the environment and to date, little has been designed into them to allow rapid deployment, in order to provide efficient transportation, or to improve efficiencies in the overall SNF disposal process.

Today, the SNF casks are heavy, weighing up to 250,000 lbs. The current casks are cumbersome to manage and move, both due to their weight and size. The casks need two massive cranes with more than 125-ton capacity at each end of the transport chain when the casks are moved to another location. The casks are expensive, costing upwards of \$6,000,000 each to construct and to transport. The current casks have limited capacity, with less than twenty-four (24) SNF assemblies per cask. There are stringent requirements for cask licensing/permitting that may or may not be indicative of the behavior of the cask system in real world catastrophic situations. Some published licensing tests such as “dropping the cask test” seem to be designed for real world situations, however, in a true situation the full extent of the damage to the cask may not be captured during the published test. In other words, the test does not go far enough to cover the full range of real-world possibilities which could occur while transporting a given cask of radioactive materials.

Only one cask per tractor trailer (see *Figure 12b*) is normally used for SNF transport because of the size and weight of the current cask systems.

A further aspect of the cask system is the present industry business model. Currently, companies in the storage and transport areas focus on managing revenues by selling their expensive casks at multi-million-dollar rates, charging fees for transport, as well as also charging millions of dollars annually to store the casks on the surface behind a wire fence on a concrete or gravel pad. In one recent case, in the northeastern U.S., storage costs of \$264,000,000 USD for forty-three (43) casks on the surface were charged to the U.S. government. Transport operations also require specially-permitted massive rail or tractor-trailer transport systems to move the SNF between the originating sources and destinations of the SNF. None of the elements present in the temporary storage business model provide for a long-term solution to the SNF disposal problem. This business model is unsustainable and contributes nothing to disposing of the HLW material.



Figure 12a: Surface Cask Storage

There is a significant and long-felt (but currently unmet) need for new devices, apparatus, systems, mechanisms, means, methods, and business models that transport SNF assemblies (and/or portions thereof) in a manner that is both cheaper and safer.

The new **SuperLAT™** transporter uses an integrated container mechanism, i.e., a containment layer, such that any enclosed radioactive material that might potentially be expelled, ejected, leaked, and/or extruded from internally located waste-capsules during transit for any reason (e.g., a severe impact event) may remain safely confined and trapped inside so that it is surrounded cocoon-like by the body of the containment layer, thus protecting the external environment from

harm. *Figure 13* shows a container tube being crushed by a LaBounty™ Mobile Shear, but with its contents still remaining intact.

The novel transporter is a reusable device for removable housing of radioactive materials, wherein the transporters may be configured for safely containing the radioactive materials during the transportation operations of the transporters. A given transporter comprises multiple layers, shown in *Figure 14*, namely, (1) an outermost structural jacket, (2) an innermost liner, and (3) a radiation shielding layer. The outermost structural jacket is made from strong materials like steel, titanium, and/or the like, but *not stainless steel*, which is a much weaker material. The radiation shielding layer comprises one or more sub-layers. The radioactive materials are removably stored inside an inner cavity of the transporter, which is within the (innermost) liner. The inner cavity is accessible from at least one terminal end of the transporter.

The multilayers of the transporter comprise a protective or shielding zone containing cylindrical gamma and/or neutron radiation protective layer(s). The protective or shielding zone(s)/layer(s) comprise a combination of several available material systems for shielding and radiation protection. The multilayers of the transporter comprise a cylindrical neutron-absorption layer, with closed or closeable ends. The shielding layer is optimized in thickness to maximize protection while minimizing transporter weight.



Figure 12b: Truck Transport



Figure 13: Crushed Container

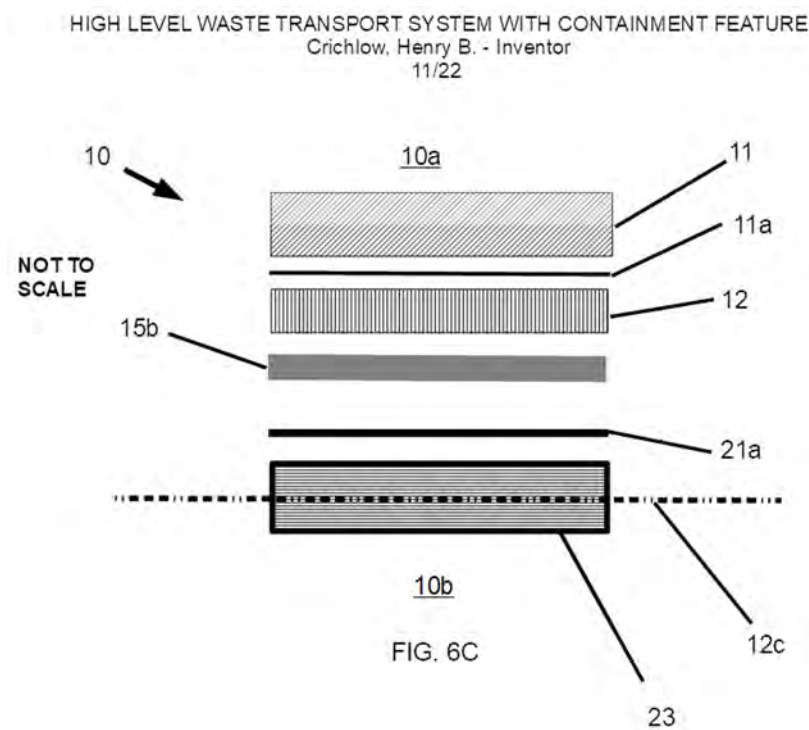


Figure 14: Cross-Section of Capsule Wall

HIGH LEVEL WASTE TRANSPORT SYSTEM WITH CONTAINMENT FEATURE
Crichlow, Henry B. - Inventor
12/20

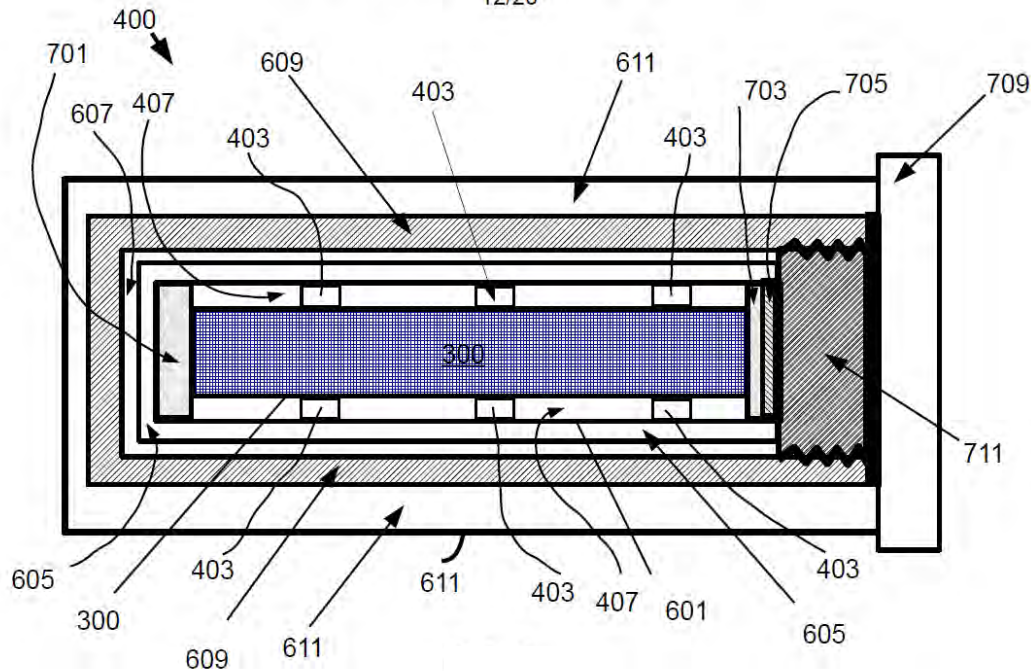


Figure 15: Cross-Section of Transporter

Conclusion:

There are literally thousands of expensive and well-written reports published and unpublished across the globe related to the technologies for high-level nuclear waste disposal.

There are more than 33 areas specifically related to and describing the problems of high-level nuclear waste disposal. These 33 areas of interest are the following:

System Reliability, Timeliness of Implementation, Institutional Acceptance, International Acceptance, Acceptance by Technical Industry, Operational Versatility, HLW Retrievability, Environmental Protection, High-Level Waste (HLW) Volume Capacity, Low-Level Waste (LLW) Volume Capacity, Waste-Capsule Design Simplicity, Capsule Materials Availability, Capsule Transport Ease, Capsule Handling Efficiency, Available Automatic Robotic Systems, Licensing of the Technology, Political Roadblocks, Autocriticality Issues, Resistance to Reuse of HLW, Theft-Resistant Systems, Diversion Resistance Systems, System Redundancy, Comparative Economics, Payroll Jobs, Integrative Solution, Engineered Barriers, Geologic Barriers, Natural Barriers, Heat Load, Off-Gassing of Nuclear Material, Personnel Health & Safety, Radiation Safety, Radionuclide Migration, Spontaneous Ignition, Ground Water problems, System Reboot, Technology Patentability.

There may be other areas of interest identified and added.

After three decades of concerted effort in near-surface mined-tunnel research and development, and billions of U.S. dollars of expenditures, there is still no acceptable solution that exists up to this present date. It should now be clear that professional engineers, scientists, and technical researchers should not support spending billions of U.S. dollars from their national treasuries on the near-surface mined-tunnel type projects, which only place the HLW in various types of shallow rock formations with questionable long-term integrity.

Geologists can easily demonstrate these shallow zones will eventually leak small amounts of dangerous radionuclides in a few decades and extensive amounts over geologic time. This leakage will take place by fluid migration through natural conductive fractures that are almost always present in formations near the Earth's surface. Regardless of what ever superficial man-made reinforcements are applied to the walls to protect the capsules, *this leakage will inevitably occur*. A deep geological repository in lateral wellbores that have been drilled in impermeable rock formations at least 10,000 feet below the surface is the *only feasible way* to solve this problem. This is illustrated in the following sections of this response to the USDoE *Request for Information*.

Topic Area Covered in this Report Section:

Area 3:

Interim Storage as Part of a Waste Management System

Respondent: NuclearSAFE Technology LLC

Address:

[REDACTED]

Phone:

[REDACTED]

Contact:

Dr. Henry Crichlow

Email:

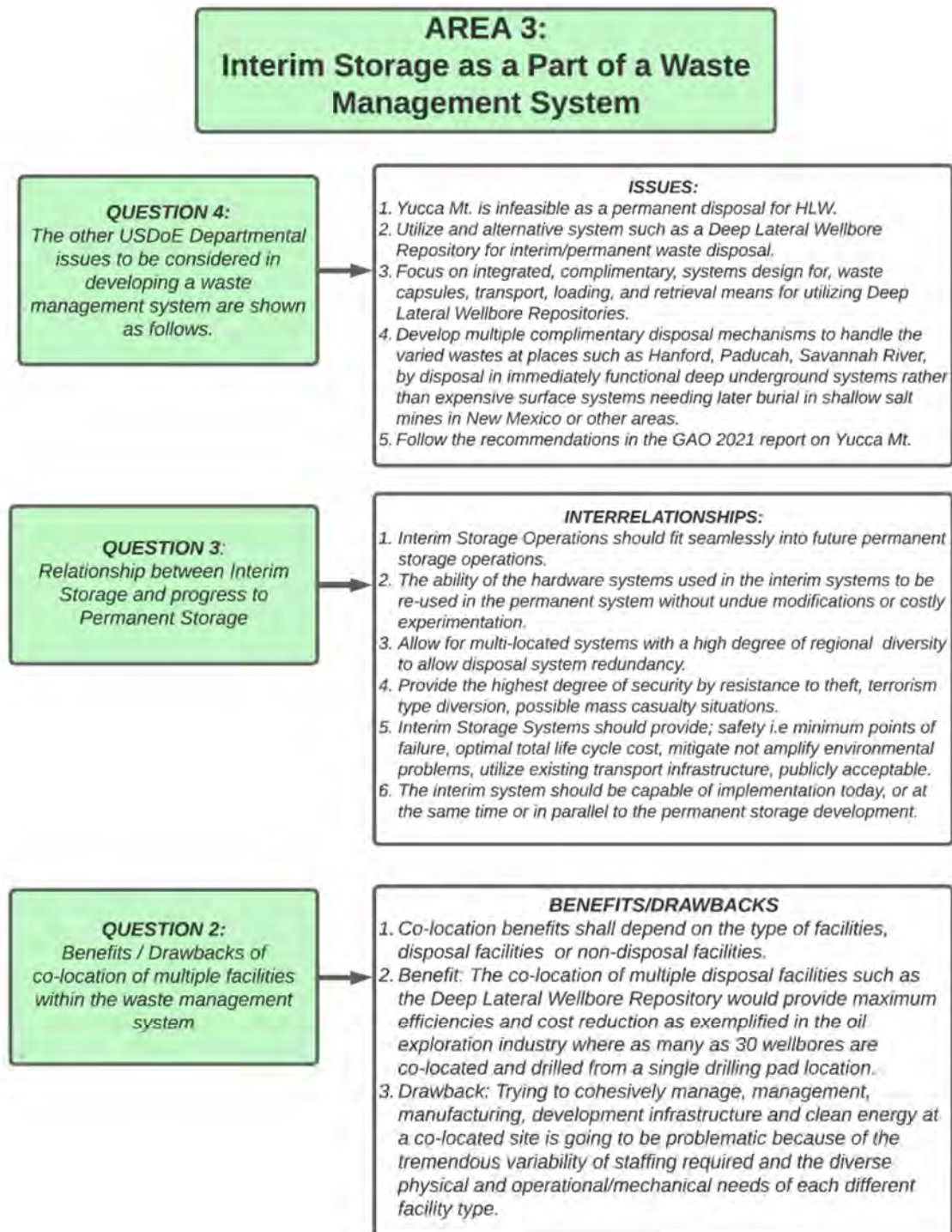
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Section 2

RFI Response

Area 3: Interim Storage as Part of a Waste Management System

Section 2:



Preamble:

“A successful Near-Surface Mined-Tunnel Repository (NSMTR) for high level nuclear waste (HLW) disposal will never be implemented, anywhere on the planet, regardless of the billions of dollars expended in the fruitless effort.”

There are two serious, unsurmountable issues with the storage/disposal of HLW in a NSMTR. First of all, there is the problem of groundwater transport of soluble radioisotopes via conductive natural fractures. For example, the presence of the short-lived radioisotope ^{36}Cl that was produced by nuclear testing in the 1950s and 1960s, and which was found in multiple samples taken from the Yucca Mountain research tunnel, was confirmation that surface water had seeped down to the research tunnel within the last 40 years – or more likely, in a much shorter period of time. Second, UO_2 which is the main constituent of spent nuclear fuel (SNF) pellets is chemically unstable in an oxidizing NSMTR environment. Therefore, this *insoluble* U^{+4} species will eventually be oxidized to one or more *soluble* U^{+6} species, which could easily dissolve in groundwater; and afterward, these U^{+6} species and other soluble, highly-radioactive isotopes released from the UO_2 matrix of the SNF pellets could be readily transported away from the NSMTR to contaminate freshwater aquifers or make their way up to the Earth’s surface, thereby becoming a hazard to human health. HLW that is emplaced in any kind of a suitable geologic repository must be chemically stable and hydraulically isolated for at least 10,000 years. However, in the relatively-shallow environment of an NSMTR, chemical, physical, and/or electrolytic degradation of the nuclear waste material will almost inevitably occur, regardless of the presence of any additional protective barriers, such as the titanium drip shields that are planned to be installed subsequent to emplacement of HLW materials in Yucca Mountain.

By taking an entirely-different approach, there is a viable, economical solution available today. This novel solution involves using multiple deep, lateral wellbore systems. The vertical section of each wellbore will be drilled below a depth of 10,000 feet, with long lateral sections that will be “completed” by being lined with protective steel casing strings, which are tightly sealed inside wellbores by displacing impermeable cement slurries into the annular spaces outside the casing strings. This innovative system has several distinct advantages over a relatively-shallow NSMTR: (1) the required volumetric capacity to emplace any additional HLW capsules can be achieved by drilling additional lateral wellbores in the future as they are needed; (2) the greater isolation of the HLW in deep lateral wellbores will provide much greater protection to the environment and to human health than is possible in a NSMTR; (3) this system will be more economical than any type of NSMTR; (4) by not being required to work underground, personnel can conduct their work in much safer conditions than in a NSMTR; (5) and because the technology, tools, and equipment are now available, and a skilled work force and a robust 24/7 infrastructure are also already in place, then the time required to sequester all high-level waste currently stored at surface is minimal when compared to the decades that will elapse before eventual implementation of an operational NSMTR.

Currently-proposed systems, such as the Yucca Mountain geological repository, are only variations of the NSMTR approach, i.e., near-surface systems, with HLW storage/disposal located

either above or slightly below the freshwater table. It should be noted that the first technological breakthrough that actually taught using deep, lateral wellbores as a strategy for storage/disposal of waste was published in a U.S. Patent and Trademark Office (USPTO) patent that was filed by Dr. Henry Crichlow in 1997. This novel system was later publicized at an international conference in Regina, Canada in 2009. Oddly, no mention of this technology was made in United States Department of Energy (USDoE) sponsored research until about a decade afterward. Although several thousand wellbores, each having lateral sections longer than 10,000 feet, have been successfully drilled worldwide in the international oil and gas industry, the USDoE and its contractors did not acknowledge that this technology even existed until very recently.

It is recommended that the USDoE expand its search for viable systems and methods for storage/disposal of high level waste to include investigating and analyzing the benefits of other existing technologies that are capable of providing effective and economical systems for high-level waste disposal, but which have apparently been overlooked during the last three decades by the USDoE and its contractors because of a narrow focus that seems to be fixated on finding solutions to problems inherent in NSMTR systems.

The proprietary technology, systems, and methods that have been researched, developed, and published by the principals of NuclearSAFE Technology LLC (NST), led by their CEO, Dr. Henry Crichlow, and which can effectively and economically resolve the seemingly intractable problem of HLW disposal, have been briefly illustrated and summarized herein. This is an optimal approach that would allow the USDoE to move ahead with developing viable geologic repositories for storage/disposal of high level radioactive waste that would also be viewed favorably by the U.S. Congress and the general public, – since it can be definitively shown that using deep lateral wellbores for HLW storage/disposal can safely and effectively allow this highly-radioactive material to be emplaced very deep in the subsurface where it will be completely isolated for hundreds of thousands or even millions of years.

The combined, patented approaches presented below address major aspects and problems associated with the disposal of HLW in this country today, as well as providing the means, methods, and processes to economically solve these problems within a few years, rather than requiring several decades. The types of nuclear waste include: spent nuclear fuel rods, uranium hexafluoride, weapons research materials, and depleted uranium projectile stockpiles on military bases. The combination of all of this patented know-how provides a coherent, systematic, and integrated blueprint/roadmap that illustrates the means and methods capable of solving the high-level waste problem. The areas that have been researched and developed fall into the following specific categories:

- Geologic Repository Operations
- Capsule Design
- Capsule Retrieval
- Capsule Loading

- Capsule Protective Media
- In-situ Waste Vittrification Processes
- Nuclear Weapons Production Waste Disposal
- Spent Fuel Assembly Management
- Transportation Systems
- High Level Waste Management Systems

Technological Summaries:

A selected number of patents are provided herein to establish the areas of primary interest in the disposal processes and the means and methods to solve the technical, operational, environmental, and economic problems. The selected patent list is as follows:

5,850,614	6,238,138	8,933,289
10,427,191	Retrievable Capsule	11,167,330
17/185,761	10,518,302	17/364,715
11,024,436	17/024,570	17/243,491
16/815,402	17/159,819	17/566,940
10,807,132	16/888,578	2021/0027902

The technology has been developed privately without any government funding or support and is focused on solving the problem of high-level waste disposal in our time by utilizing deep geological repositories comprising lateral wellbore systems at least 10,000 feet below the surface.

The present technology is not designed to provide never-ending sources for financial profits for a specific business model, as seems to be the case with current high-level waste surface storage operators. Guided by existing Federal Law, these operators have constructed expensive surface systems to maintain a dead-end process in which the stored waste eventually has to be moved multiple times and these sites have to be cleaned up, exposing the environment and the public to possible contamination while transferring material from current surface storage sites to new surface storage sites or possibly to a final repository system. The technologies illustrated herein provide a significant departure from the status quo.

The combined patented processes address all of the major aspects and problems involved with HLW disposal in this country today. Together they provide a coherent, systematic, and integrated approach that illustrates the means and methods capable of solving the high-level waste problem. The patent summary is shown in the following pages.

FOUNDATIONAL PATENT FOR HIGH LEVEL WASTE DISPOSAL IN DEEP LATERAL WELLBORE SYSTEMS

SYSTEMS AND METHODS FOR DISPOSING OF NUCLEAR WASTE IN UNDERGROUND ROCK FORMATIONS

USPTO: 5,850,614

FILED : 7/14/1997

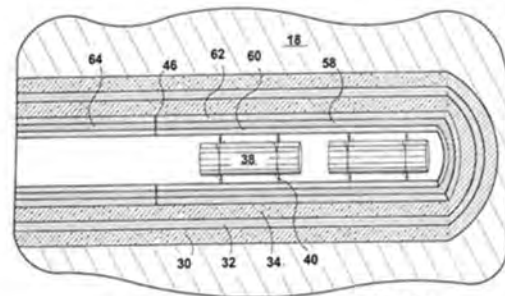
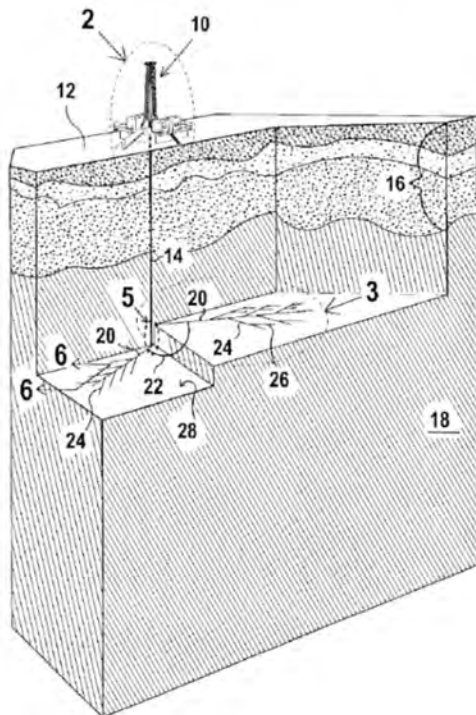


FIG 9

Dr. Henry Crichlow, Inventor

First Worldwide Patent on using deep vertical wellbores and horizontal laterals for nuclear waste disposal in deep geological formations.

A system and method for disposing of nuclear waste in deep underground rock formations, comprising drilling a vertical wellbore from the surface into the underground rock formation, drilling horizontal laterals extending from the vertical wellbore where the horizontal laterals are defined by the underground rock formation. The wellbore is completed with steel casings and cement annuli which are then filled with encapsulated nuclear waste.

The SuperLAT™ disposal system trademarked by NuclearSAFE was first developed in 1997

**METHOD FOR TEMPORARY OR PERMANENT DISPOSAL OF NUCLEAR WASTE
USING MULTI-LATERAL AND HORIZONTAL BOREHOLES IN DEEP ISOLATED
GEOLOGIC BASINS.**

USPTO 6,238,138

Filed: 12/14/1998

First worldwide patent on using deep wellbores and horizontal laterals for **temporary and permanent** nuclear waste disposal in deep geological formations.

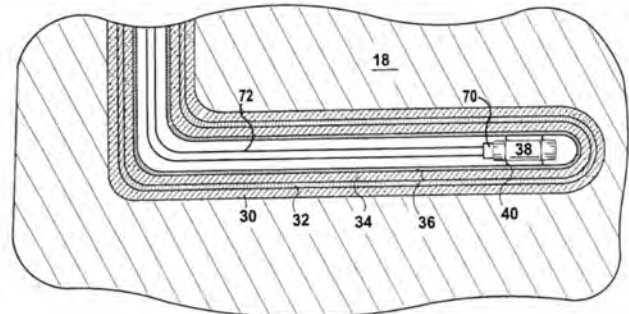


FIG 11

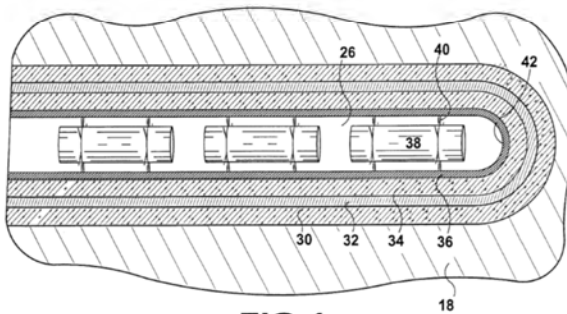


FIG 4

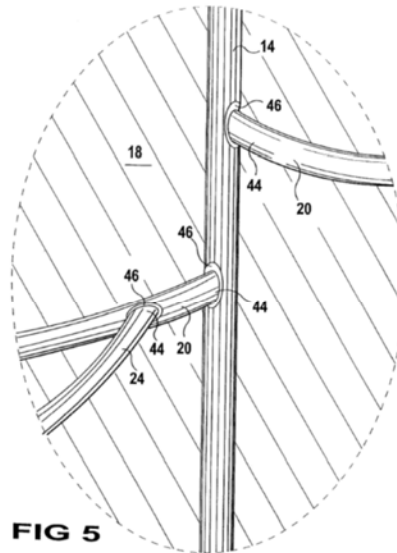


FIG 5

A system for disposing of nuclear waste in underground rock formations, drilling a vertical wellbore from a surface extending into an underground rock formation, the well bore extending to a depth able to prevent radioactive material placed therein from reaching a surface of the area of land and of a predetermined distance from active water sources; defined by the underground rock formation; means for securing a first layer of cement within the primary horizontal lateral by circulating cement between a steel casing and the wall of the wellbore in the primary horizontal lateral; means for encapsulating nuclear waste to be stored in the primary horizontal lateral; e) means for placing the encapsulated nuclear waste in the primary horizontal lateral.

***The SuperLAT™ disposal system trademarked by NuclearSAFE
was first developed in 1997***

METHOD FOR TEMPORARY OR PERMANENT DISPOSAL OF NUCLEAR WASTE

USPTO 8,933,289

Filed: 2/25/2010

Dr. Henry Crichlow, Inventor

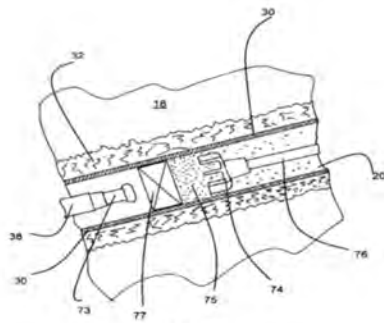


FIG 11

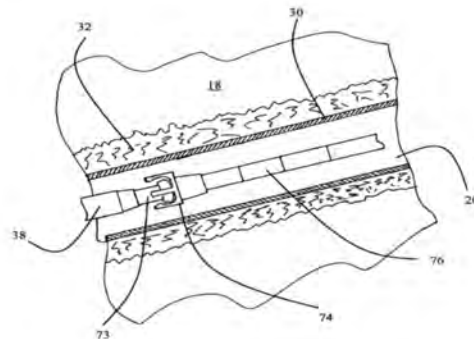


FIG 12

Method of disposing of and retrieving of the disposed nuclear waste capsules where disposal is made in geological formations using deep vertical and horizontal wellbores.

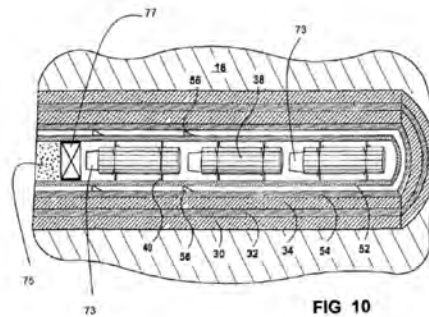


FIG 10

A method of temporarily or permanently disposing of nuclear waste in underground rock formations, drilling a first primary lateral extending horizontally from the vertical wellbore whereby the primary lateral is defined by the underground rock formation; encapsulating nuclear waste to be stored in a canister for storage in the primary lateral; placing the encapsulated nuclear waste in the primary lateral and retrieving the encapsulated nuclear waste from the primary lateral when needed, wherein the encapsulated nuclear waste is retrieved from the laterals by the steps of: inserting a retrieving tool attached with a drill pipe from the surface of earth into the lateral; connecting the retrieving tool to a connector of the canister and pulling a drill pipe to retrieve the canister on the surface of earth.

DEEP GEOLOGIC DISPOSAL OF NUCLEAR WASTE

USPTO – 10,427,191

FILED : 4/06/2017

Dr. Henry Crichlow, Inventor

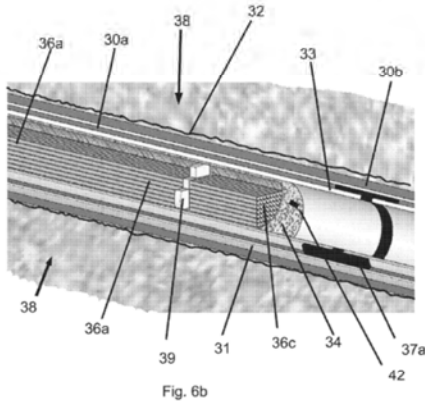


Fig. 6b

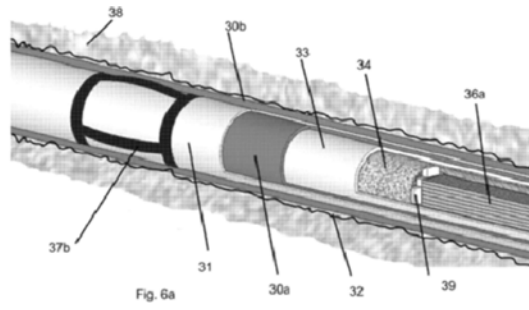


Fig. 6a

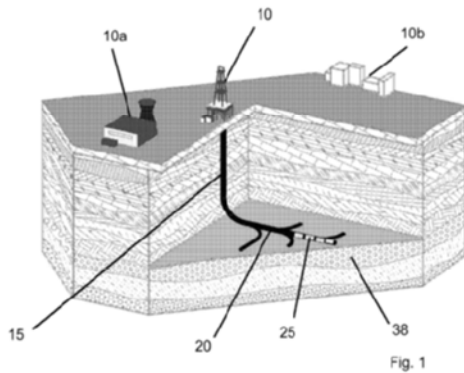


Fig. 1

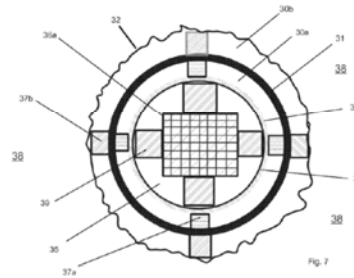


Fig. 7

Systems and methods for long term disposal of high level nuclear waste in deep geologic formations are described. Such systems and method may include largely intact spent nuclear fuel rods in a disassembled form that may be placed into waste-capsules (e.g., carrier tubes); which may then be placed into various well boreholes. Example embodiments may provide waste-capsules capable of containing and disposing of waste generated from spent nuclear fuel, including means for harvesting the nuclear waste from cooling pools and operationally processing the waste fuel assemblies for inclusion in the waste-capsules with various engineered barriers; along with storage in horizontal well boreholes drilled into closed deep geologic formations.

RETRIEVABLE CAPSULE SYSTEM AND METHOD

Gary Schneider, Inventor

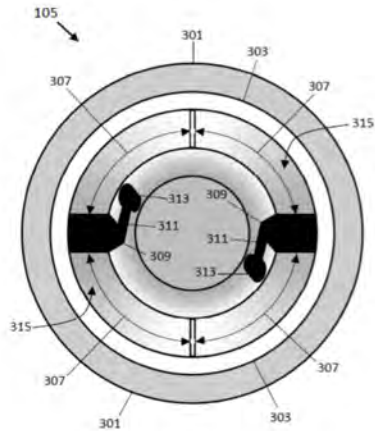


FIG. 3D

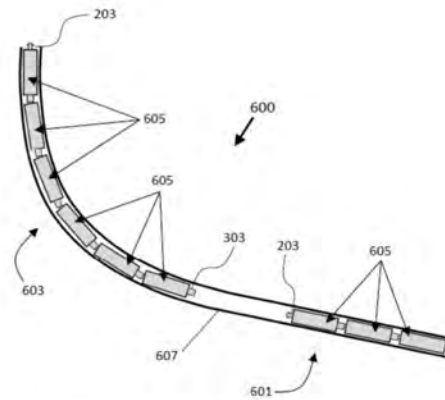


FIG. 6

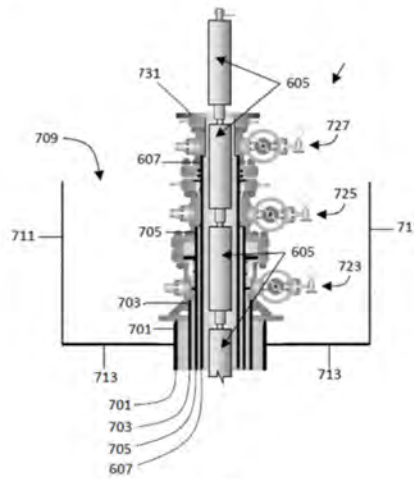


FIG. 7A

Elongate capsules for housing waste are configured for disposal (placement) into wellbore(s) that are located in particular deep underground geologic formation(s). These capsules have opposing structures for physically linking multiple capsules together in an end-to-end fashion. The structures of the retrieval-tool may be configured to (removably) attach to a stinger with pins of a given capsule (which may be linked to other capsule(s)); and then the retrieval-tool may be used to retrieve the given capsule(s) from a given wellbore. Capsule retrieval systems and/or method may utilize such capsule(s) and the retrieval-tool.

Self-loading waste disposal systems and method

USPTO – USPTO 11,167,330

FILED : 5/06/2020

Dr. Henry Crichlow, Gary Schneider, Inventors

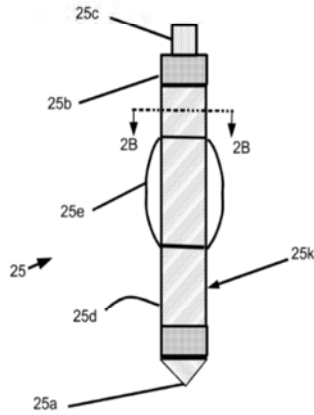


Fig. 2A

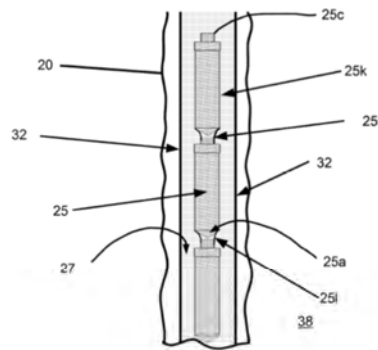


FIG. 2D

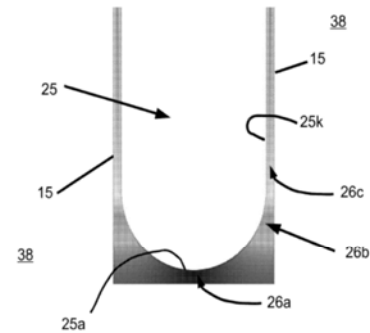


FIG. 4

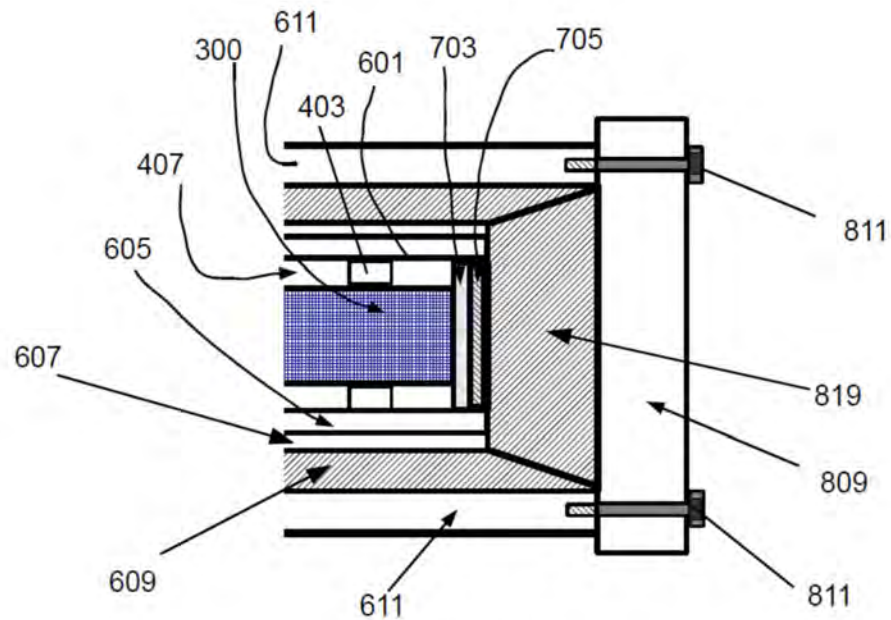
Self-loading systems and methods for disposal of waste materials in a deep underground formation may include at least one wellbore that runs from the Earth's surface to the deep underground formations, wellbore viscous fluid within that at least one wellbore, and at least one waste capsule, wherein the at least one waste capsules houses some waste and is configured to fall within both the at least one wellbore and the wellbore viscous fluid. The systems and methods may also include at least one human-made cavern located in the deep underground formation and connected to the at least one wellbore, wherein the at least one human-made cavern may be configured to receive the at least one waste capsule. The systems and methods may also include a counter for counting waste capsules and/or a robot for dropping waste capsules into a wellhead leading to the at least one wellbore.

NUCLEAR WASTE TRANSPORTER WITH CONTAINMENT FEATURE

USPTO – 17/185,761

FILED : 2/25/2021

Dr. Henry Crichlow, Inventor



Reusable transporters for removably housing of radioactive materials and configured for safely containing the radioactive materials during transportation operations of the transporters are described.

Site selection for a deep underground nuclear waste geologic repository

USPTO – USPTO 10,518,302

FILED : 10/31/2018

Dr. Henry Crichlow, Inventor



FIG. 4

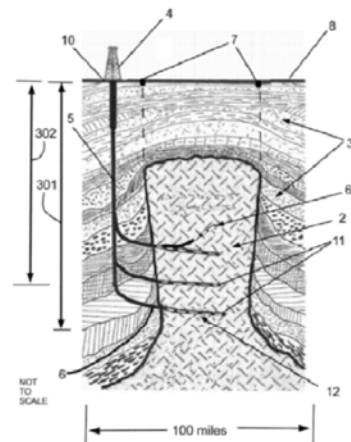


FIG. 3



Fig. 5

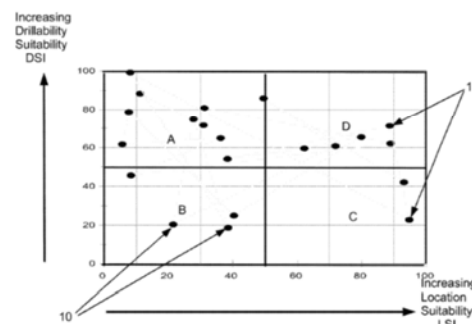


FIG. 6

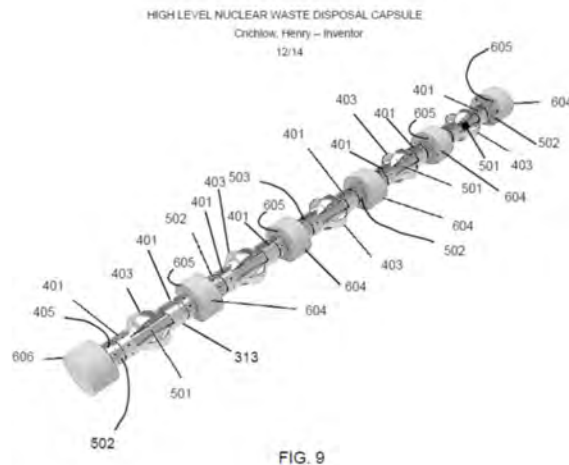
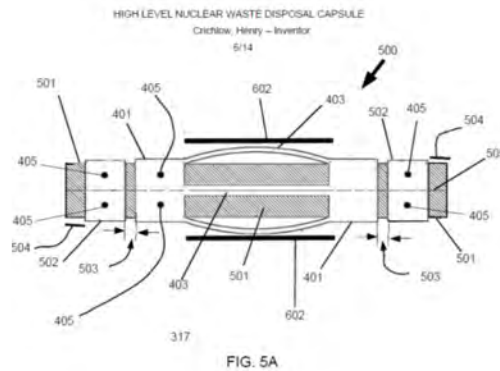
Method, apparatus and system for location evaluation and selection of a site, capable of effectively implementing a deep geologic repository for the disposal and storage of high-level nuclear waste and evaluating the waste location by scientific and technical analysis incorporating human and social interaction are provided. In one aspect, engineering, drilling, geological, geographic, and demographic data associated with a plurality of prospective implementation locations and human knowledge and physical infrastructure may be utilized in determining most desirable implementation surface drilling operations.

CAPSULE SYSTEM FOR WASTE DISPOSAL

USPTO – 17/364,715

FILED : 6/30/2021

Dr. Henry Crichlow, Inventor



A nuclear waste capsule may include: an outer shell; an inner tube, with particular structure(s) attached thereto, within that inner tube. Each particular element structurally supports its associated SNF assembly (or portion thereof) within the given inner tube. The so loaded waste-capsule may be deposited within a wellbore that is located within a repository geological formation.

Waste capsule system and construction

USPTO – USPTO 11,024,436

FILED : 8/05/2020

Dr. Henry Crichlow, Inventor

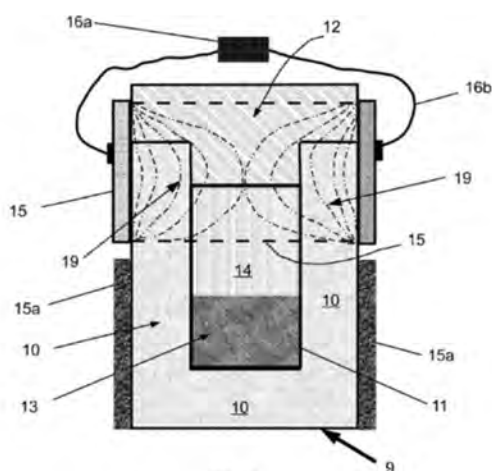


FIG. 4A

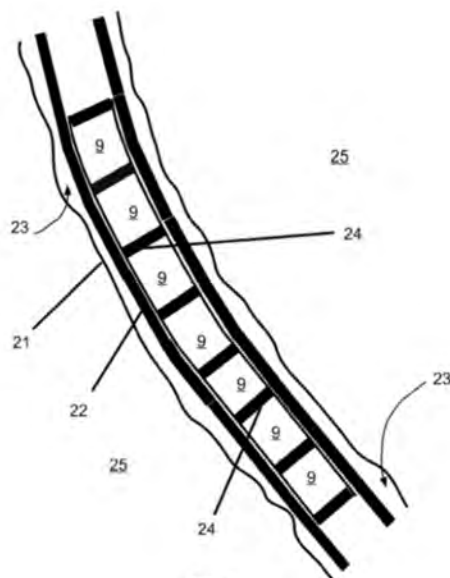


FIG. 6

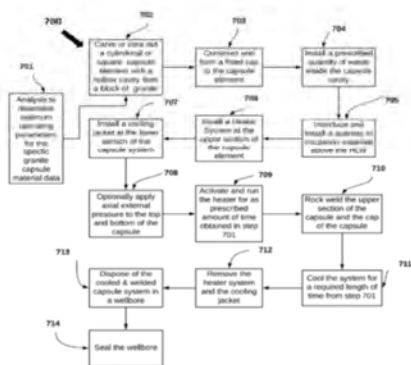


FIG. 7

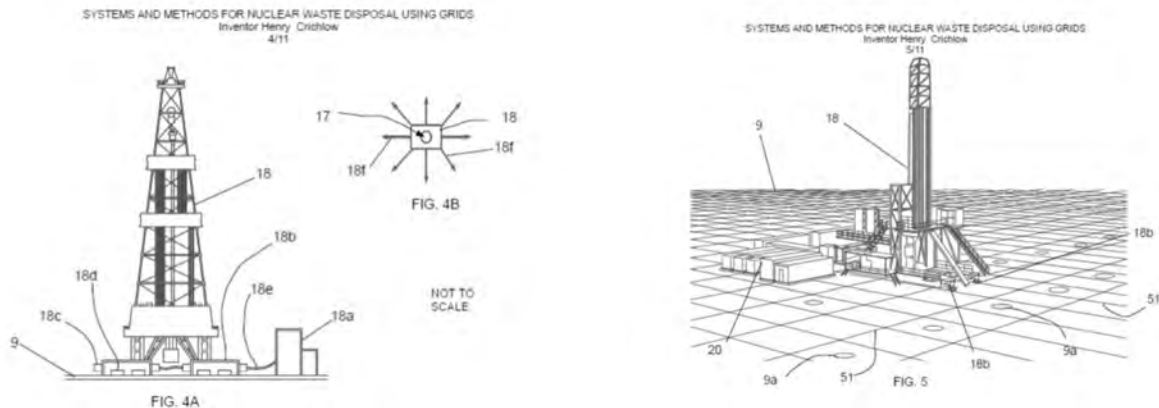
Waste capsules for disposal of radioactive materials, including weapons grade plutonium, are entirely from rock, such as, but not limited to, granite; wherein a cap of such a waste cap: seamlessly rock welded to a lower body portion of the given waste capsule, to form the given capsule, with the radioactive materials inside of a cavity of that waste capsule. The sealed and welded waste capsule, with the internal radioactive materials, is then loaded into a wellbore that extends into a deep geological rock repository, thousands of feet below the Earth's surface that the waste capsule comes to rest in a wellbore located within the deep geological rock repository. The waste capsule may include insulating material in the cavity.

NUCLEAR WASTE DISPOSAL USING GRIDS

USPTO – 17/024,570

FILED : 5/29/2021

Dr. Henry Crichlow, Inventor



Embodiments of the present invention include systems and methods for long-term disposal of nuclear and/or radioactive waste materials, in liquid, solid, and/or other physical forms, using an array deeply located human-made caverns (caverns), wherein the array of caverns are within a deep geologic rock formation and below a grid pattern on a surface of the Earth. Each cavern is made from a substantially vertical wellbore, by drilling and under reaming operations upon a distal portion of the substantially vertical wellbore.

NUCLEAR WASTE DISPOSAL DEEP SALT FORMATIONS

USPTO – 17/243,491

FILED : 4/28/2021

Dr. Henry Crichlow, Inventor

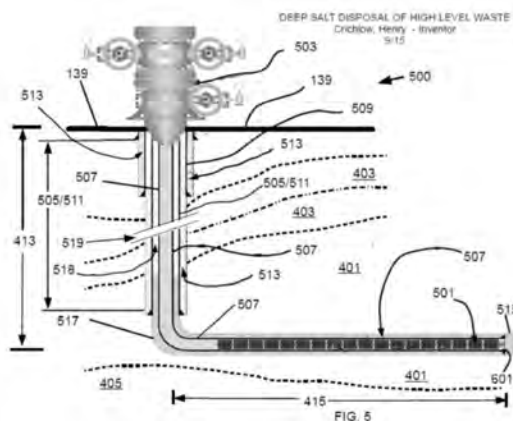


FIG. 5

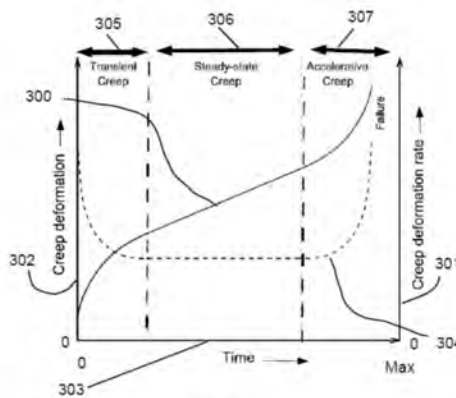


FIG. 3

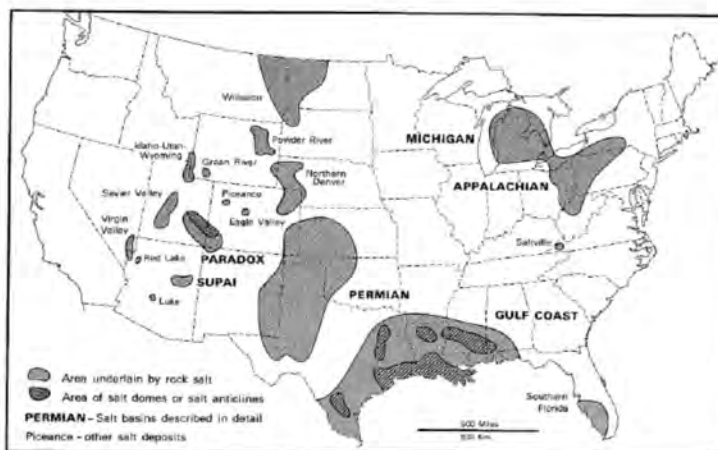


Figure 1: Map showing rock salt deposits in United States.

FIG. 1| (Johnson)

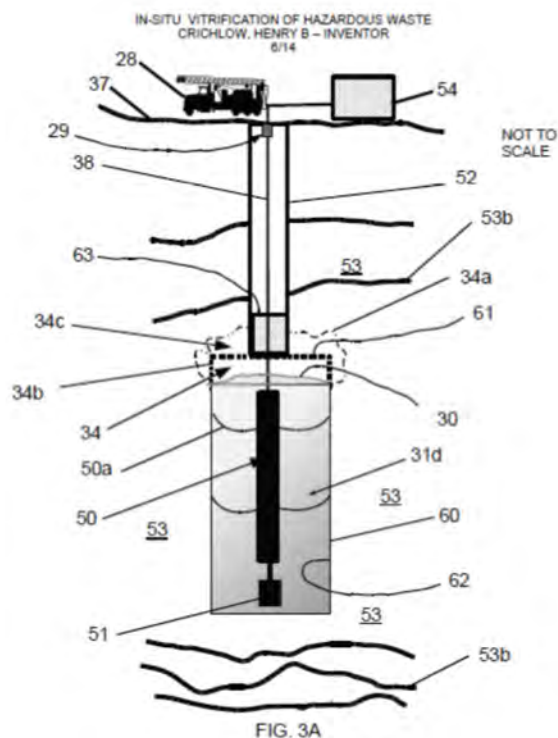
Systems, methods, processes, and/or steps for the long-term disposal of high-level nuclear and radioactive waste, along with other radioactive waste forms, is done within deep salt formation(s) of predetermined characteristics. Waste may be emplaced within a given deep salt formation and after emplacement, creep of that deep salt formation around the deposited waste may entirely entomb that emplaced waste safely for geologic time periods. After emplacement, creep of the deep salt formation will destroy the initial boundaries of the horizontal wellbore and/or of the human-made cavern. This creep sealing process may occur over relatively short time periods.

IN-SITU VITRIFICATION OF HAZARDOUS WASTE

USPTO – 16/815,402

FILED : 11/03/2020

Dr. Henry Crichlow, Inventor



In-situ vitrification of hazardous waste occurs within human-made caverns. The human-made caverns may be located at distal (terminal) ends of substantially vertical wellbores and the human-made caverns may be located within deep geological rock formations, that are located at least two thousand feet below the Earth's surface. The hazardous waste that is vitrified into glass within such human-made caverns may be radioactive. The vitrification within a given human-made cavern is accomplished by at least one heater that operates according to a predetermined heating and cooling profile. During vitrification the heater may be reciprocated up and down to introduce currents into the waste liquid for uniform temperature dispersion. The heater may be removable, reusable, single use, and/or disposable. Cold caps and/or insulating blankets may be used over a given layer of vitrified waste product within the given human-made cavern. Heater weights, mixing vanes, and/or downhole sealing packer may also be used.

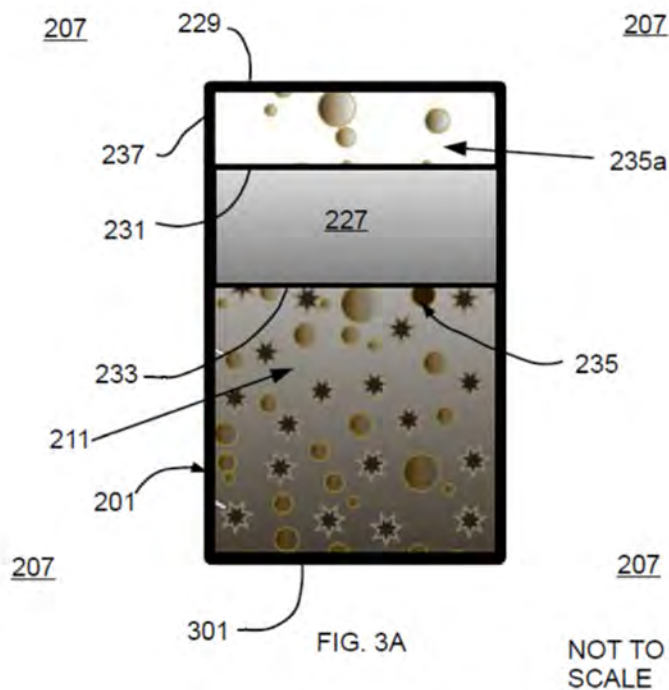
MANAGING VOLATILES IN NUCLEAR WASTE VITRIFICATION

USPTO – 17/159819

FILED : 1/27/2021

Dr. Henry Crichlow, Inventor

MANAGING VOLATILES IN NUCLEAR WASTE VITRIFICATION
Crichlow, Henry – Inventor
3/22



In-situ volatiles are treated during and after vitrification of radioactive waste, being converted into fixed-chemicals, that are retained in, on, and/or proximate to a cold-cap located vertically above vitrified melt. The cold-cap may have one or more volatile fixing additives (VFAs) for retaining the fixed-chemicals. The VFAs are located in and/or the cold-cap. The vitrification may occur within at least one human-made cavern. The human-made cavern may be located within a deep geologic rock formation

SYSTEM AND METHOD FOR LLW DISPOSAL

USPTO – 17/566,940

FILED : 12/31/2021

Dr. Henry Crichlow, Inventor

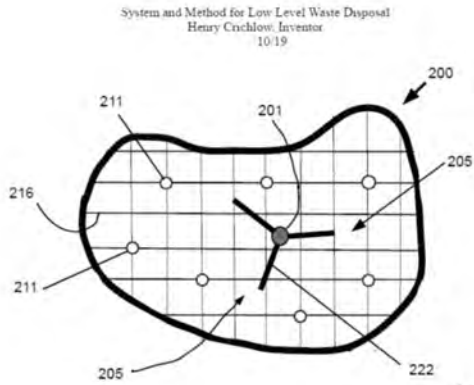


FIG. 7

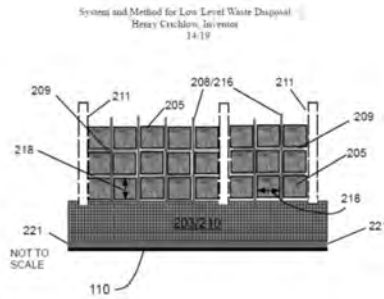


FIG. 10

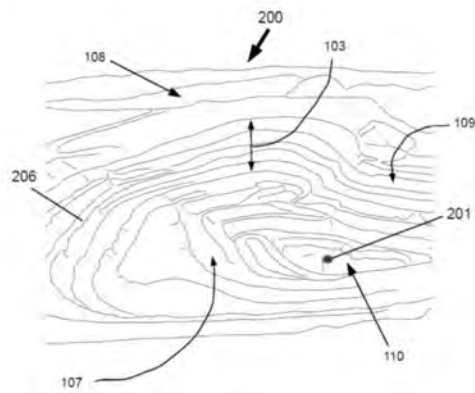


FIG. 6A

The present invention relates in general to the disposal of low-level nuclear waste material in human-made or naturally occurring structures at or near the earth's surface and specifically to management, treatment, and/or disposal of the low level nuclear waste materials produced during the commercial, industrial, and/or energy generation operations

Dr. Henry Crichlow, Inventor



The NuclearSAFE trademarked SuperSILO™ disposal system is based on this patent.

DISASSEMBLY AND DISPOSAL OF MUNITIONS COMPONENTS

USPTO – 16/888578

FILED : 5/29/2021

Dr. Henry Crichlow, Inventor

DISASSEMBLY AND DISPOSAL OF MUNITION COMPONENTS
Crichlow, Henry B. - Inventor
4/5

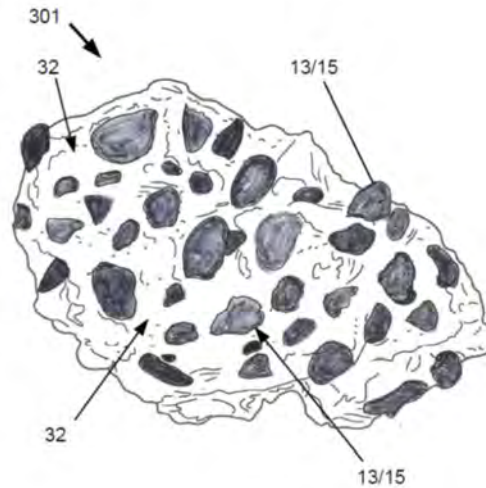


FIG. 3A

Methods for disposing of munition components including propellants from heavy metal penetrators and disposing of those separated components into different types of geological formations. The separated heavy metal penetrators (with or without their associated projectile jackets) may be disposed of within human-made caverns, where such human-made caverns may be located within a deep geological formation that is often 2,000 feet or more below the Earth's surface

MANAGING THE DISPOSAL OF HIGH-LEVEL NUCLEAR WASTE

USPTO – 2021/0027902

FILED : 6/17/2020

Dr. Henry Crichlow, Inventor

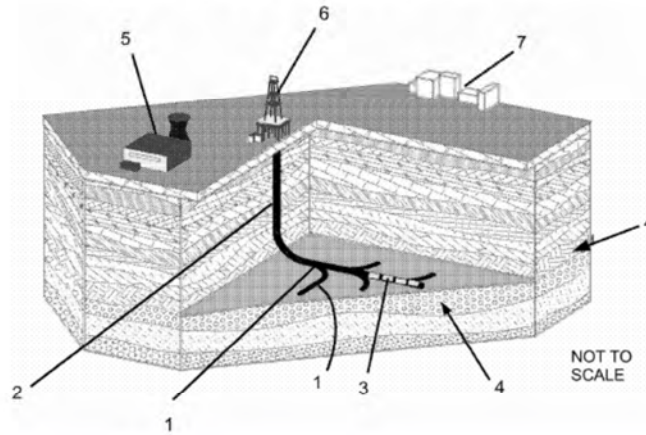


FIG. 1

A process of managing the disposal of high-level nuclear waste is provided. Example embodiments may provide methods in which the power generating utilities, either singly or as a group, take the lead role in disposing of the nuclear waste generated in their operations by sequestering their high level waste in licensed deep geological repositories, then turning the title to the high level waste and ownership of the high level waste over to the Government

Topic Area and Question Covered in this Report Section:

Area 3:

Interim Storage as Part of a Waste Management System

Question 4:

What other issues should the Department consider
in developing a waste management system?

Part 2

Respondent: NuclearSAFE Technology LLC

Address:

[REDACTED]

Phone:

[REDACTED]

Contact:

Dr. Henry Crichlow

Email:

[REDACTED]

Section 3

RFI Response

Area 3: Interim Storage as Part of a Waste Management System

Question 4: What other issues should the Department consider in developing a waste management system?

SECTION 3:

There are both major and minor issues which must be analyzed to provide for effective disposal of HLW. The strategic, tactical, and operational issues are shown in this theoretical ranking below:

No.	Parameter	Rank
1	System Reliability for 10,000 years	1000
2	Environmental Effects	900
3	Ground Water Problems	850
4	Retrievability of the High-Level Waste	700
5	Radiation Safety	700
6	Radionuclide Migration	700
7	Acceptance by the Technical Industry	500
8	Timely System Development	500
9	Comparative Economics	500
10	Operational Versatility	400
11	Personnel Health & Safety	400
12	Institutional Acceptance	300
13	International Acceptance	250
14	Licensing of Technology Process	200
15	Political Roadblocks	200
16	Redundancy	150
17	Resistance to Reuse of HLW	150
18	Theft-Resistant	125
19	Diversification Resistance	100
20	Integrative Solution	100
21	Natural Barriers	100
22	Engineering Barriers	100
23	Geologic Barriers	100
24	Heat Load	50
25	Off-Gassing of Nuclear Material	50
26	Spontaneous Ignition	50
27	System Reboot in event of Failure	50
28	Intangible Attributes	50
29	High-Level Waste Volumes Stored	50
30	Low-Level Waste (LLW) volumes	40
31	Autocriticality	40

1. **System Reliability for 10,000 Years**
 - The system endorsed by USDoE should be able to demonstrate that there will be no failure modes when implemented. A system without any inherent geological, hydrogeological, mechanical, environmental, economic, or operational problems should be preferred.
2. **Environmental Effects**
 - The USDoE must show by undisputable scientific and engineering evidence that the approved system will not create any negative environmental effects.
3. **Ground Water Problems**
 - The effect of percolating or migrating groundwater is a critical “go-no-go” issue and has to be satisfied with 100% certainty before any disposal system is permitted.
4. **Retrievability of the High-Level Waste**
 - The ability to retrieve the waste for up to 50-100 years is relevant, and any proposed system needs to provide adequate evidence of the certainty that future retrieval operations would be able to be conducted safely and efficiently.
5. **Radiation Safety**
 - Disposal systems need to show by extensive analysis, including radioisotope and other geophysical dating methods, that geological formations designated for waste disposal have been closed for extended geological time periods.
6. **Radionuclide Migration**
 - Radionuclide migration is expected over time. The selected system must have sufficient natural and engineered barriers to prevent migration. Physical pathways that can allow migration to occur must be accounted for in any system.
7. **Acceptance by the Technical Industry**
 - The acceptability issue is foundational to the success of the disposal process. Experienced and knowledgeable technologists, scientists, and researchers must provide unbiased input into the process.
8. **Timely System Development**
 - Timing is a major issue. Yucca Mountain has been decades in the making, and any further delay in implementing HLW disposal creates problems for the general public, especially when considering the increasing yearly costs to the U.S. taxpayer for doing nothing. These delays also adversely impact eventual implementation of the rapidly-developing SMR industry. Any new approach must be capable of safe (and rapid) system deployment.

9. Comparative Economics

- A critical issue today is cost. The needs of the current HLW disposal industry are measured in tens of billions of USD. The costs are also increasing annually. There is a need to refocus on economics and effectiveness.

10. Operational Versatility

- Operational versatility is required to develop effective systems at multiple sites in various basins or provinces, each with its own distinctive geological history and strata.

11. Personnel Health & Safety

- Safety issues form the basis for successful disposal. Systems need to meet strict regulatory guidelines.

12. Institutional Acceptance

- Systems must meet all levels of institutional acceptability.

13. International Acceptance

- Systems must meet all levels of international acceptability.

14. Licensing of Technology process

- The applicable U.S. governmental agencies are required to license the disposal sites based on the regulations and standards of U.S. Federal Code 10 CFR Part 60.

15. Political Roadblocks

- System developers need to gain acceptance by working with local, state and federal regulators, as well as interested political or public-service organizations and private individuals, to educate them about the efficacy and particularly, the safety and reliability of the disposal system.

16. Redundancy

- Systems need to be redundant and to operate separately.

17. Resistance to Reuse of HLW

- Protection from re-use of HLW.

18. Theft-Resistant

- Protection from theft of HLW by unscrupulous groups or individuals. Due to the dangers of nuclear proliferation, this is a real concern since one of the radionuclides in SNF is the fissile isotope Plutonium-239 (^{239}Pu).

19. Diversion Resistance

- Protection from diversion of HLW.

20. Integrative Solution

- Integration of the processes and systems that are involved in packaging, transporting, and emplacing HLW in an interim or permanent repository is needed.

21. Natural Barriers

- Sufficient level of natural barriers should exist in the repository.

22. Engineering Barriers

- Specialized engineering barriers are needed.

23. Geologic Barriers

- Geologic strata should be the primary barriers in a geological repository to isolate the HLW indefinitely, in order to prevent migration of radionuclides.

24. Heat Load

- Systems should minimize heat load from the waste.

25. Off-Gassing of Nuclear Material

- Systems should minimize off-gassing.

26. Spontaneous Ignition

- It is not possible for HLW ignition when stored in the DLW system.

27. System Reboot in Event of Failure

- Disposal Systems should be able to be restarted at new locations easily and rapidly.

28. Intangible Attributes

- Indemnification.

29. High-Level Waste Volumes Stored

- Maximize the HLW volume stored.

30. Low-Level Waste (LLW) Volumes

- Maximize the LLW volume stored.

31. Autocriticality

- The system needs to minimize any chance of achieving autocriticality.

Topic Area and Question Covered in this Report Section:

Area 3:

Interim Storage as Part of a Waste Management System

Question 3:

To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

Respondent: NuclearSAFE Technology LLC

Address:

[REDACTED]

Phone:

[REDACTED]

Contact:

Dr. Henry Crichlow

Email:

[REDACTED]

Section 4

RFI Response

Area 3: Interim Storage as Part of a Waste Management System

Question 3: To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

SECTION 4:

There should be seamless connection between the interim storage and the permanent storage systems for HLW disposal. Operationally, and in terms of total life cycle performance, the means and methods where interim storage ends and where permanent storage begins should be a smooth transition.

There are many aspects of the development of interim storage which relate to, and which can dictate the ways in which permanent storage can be developed and how these sequential operations can provide for a more effective means of disposing of high-level nuclear waste in the long term.

The main areas of investigation should include, but are not be limited to the following:

- **Seamless continuity of operations** from interim storage to final disposal/permanent storage.
- **Cost considerations** should emphasize optimal allocation of all of the required resources that may be involved in implementing interim storage prior to permanent storage. The capability (and flexibility) to minimize the total lifetime cost of both systems should be evaluated.
- **Safety considerations should be primary** in determining the manner in which interim storage should be initially implemented, operated, and then transitioned into a final disposal solution. The USDoE should be carefully looking at all of the potential points of failure which are inherent in interim storage systems and how these would affect the health of the general public, as well as the ecosystem, prior to transitioning to a long-term storage solution.
- **Environmental problems associated with interim storage.** Would these be aggravated by the subsequent implementation of long-term disposal?
- **A multifaceted approach to development.** All required features that are implemented in interim storage should be focused to facilitate the eventual development and to help delivery of an efficient permanent storage solution.
- **Multi-locational development of interim storage.** The interim HLW storage facilities should be designed in such a manner that the eventual transition to the various operations for final disposal can be implemented timely and without major incurred costs or operational difficulties.

- Simultaneous implementation of interim storage should include key operations which will allow the preparation for final storage to be relatively uncomplicated and economical.
- Interim storage processes should utilize existing infrastructure so that same infrastructure components can continue to be implemented and utilized seamlessly whenever the final disposal systems are eventually incorporated.
- Distribution of interim storage facilities in select locations throughout the U.S, with access to the entire U.S. transportation system, should be considered. The highway systems, railway systems, and even local transportation systems should be utilized in such a way that state and local governments will not be adversely affected when the time comes to implement the final storage system. Placing the interim storage at only one site exacerbates the transportation issues.

Topic Area and Question Covered in this Report Section:

Area 3:

Interim Storage as Part of a Waste Management System

Question 2:

What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

Respondent: NuclearSAFE Technology LLC

Address:

[REDACTED]

Phone:

[REDACTED]

Contact:

Dr. Henry Crichlow

Email:

[REDACTED]

Section 5

RFI Response

Area 3: Interim Storage as Part of a Waste Management System

Question 2: What are the possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

SECTION 5:

Benefits and Drawbacks:

Co-location benefits will depend on the type of facilities, disposal facilities or non-disposal facilities.

Benefit(s): Co-location of multiple disposal facilities at a Deep Lateral Wellbore Repository would provide maximum efficiencies and cost reduction, as has been clearly exemplified in the oil and gas drilling industry where thirty (30) or more wellbores are often co-located and drilled from a single drilling pad location. Disposal systems should not be co-located with other parts of the waste disposal system.

Drawback(s): Trying to cohesively coordinate the management, manufacturing, development-infrastructure, and clean energy requirements at a co-located site will be problematic because of the diverse staff/workforce that is required, as well as the distinctive physical, operational, and mechanical components or assets that would characterize each different type of facility.

From: Tibby Elgato
Sent: Thursday, January 27, 2022 12:10 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: siting.pdf

I am pleased to respond and comment and raise a few points in objection to the Consent Based Siting and Federal Interim Storage.

A pdf is attached for your convenience.

Area 3, Item 3

1/ It is not logical to establish Interim Storage until a Final Storage facility is in Place. Otherwise, the Interim Storage will just become the Final Storage by default. It is likely we will all be using fusion or solar electricity before congress decides on a final storage plan. This may be the intent.

Area 3, Item 3

2/ The legality of an Interim Storage Plan that can so easily become a Final Storage Plan through congressional inaction is doubtful and will surely be challenged in the courts.

Area 3, Item 1; Area 2, Item 1; Area 1, Item 7

3/ Historically the DoE has sited nuclear facilities on reservations or near Communities of Color whenever possible. This may be the plan here too. The people living near the current sites are poor, politically weak and have poor medical care. In some states voting rights of Native Americans are being revoked and in many states People of Color are similarly deprived. People who are poor cannot make huge deductions to political candidates thus do not have a voice, may have poor internet access and may not have the time to attend lengthy remote meetings. The complex process described will not give people an adequate voice and is not a substitute for voting. Poor medical care means poor medical history so that the impacts of a storage facility on the health of the people in the surrounding area cannot be determined. There will be no health baseline for reference. You can bet Federal Interim Storage facilities will not be located in Vail, Aspen or Nantucket.

Area 1, Item 7

4/ Is NRC and EPA approval needed for Interim Storage? If not, why not?

Area 1, Item 2

5/ State legislatures, municipalities and governors must be in the loop, it sounds as if they may not be. All the voters in the region potentially impacted by traffic, development, resource usage, security and safety must also be in the loop. At the minimum a reasonable cost for these activities must be included and the states and municipalities compensated.

Area 3, Item 4

6/ It seem like the taxpayer is paying for this through the DoE? The nuclear power industry should be paying their own way, down to the last cent. Instead the DoE is spending their budget on misleading and inaccurate information on Facebook.

Area 1, Item 6

7/ The DoE should consider collaborating with the Sierra Club in Interim Siting.

Thank you,

Dr. John W. Cruz



Message sent from my Eniac-V.

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

Memorandum regarding Interim Siting

To: The Department of Energy

From: Dr. John W. Cruz, physicist

CC: Other recipients

I pleased to respond and comment and raise a few points in objection to the Consent Based Siting and Federal Interim Storage.

A pdf is attached for your convenience.

Area 3, Item 3

1/ It is not logical to establish Interim Storage until a Final Storage facility is in Place. Otherwise, the Interim Storage will just become the Final Storage by default. It is likely we will all be using fusion or solar electricity before congress decides on a final storage plan. This may be the intent.

Area 3, Item 3

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Area 3, Item 1; Area 2, Item1; Area 1, Item 7

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Area 1, Item 7

4/ Is NRC and EPA approval needed for Interim Storage? If not, why not?

Area 1, Item 2

5/ State legislatures, municipalities and governors must be in the loop, it sounds as if they may not be. All the voters in the region potentially impacted by traffic, development, resource usage, security and safety must also be in the loop. At the minimum a reasonable cost for these activities must be included and the states and municipalities compensated.

Area 3, Item 4

6/ It seem like the taxpayer is paying for this through the DoE? The nuclear power industry should be paying their own way, down to the last cent. Instead the DoE is spending their budget on misleading and inaccurate information on Facebook.

Area 1, Item 6

7/ The DoE should consider collaborating with the Sierra Club in Interim Siting.

Thank you,

Dr. John W. Cruz

[REDACTED]

From: Luis Cruz Perez
Sent: Friday, March 4, 2022 12:58 PM
To: Consent Based Siting
CC: Luis Cruz Perez
Subject: [EXTERNAL] RFI Response: Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities
Attachments: Luis Cruz - Response to DOE RFI on Consent-Based Siting 03042022.pdf

Hi,

I am Luis Cruz, an evening law student at The George Washington University Law School (GW Law). I write in response to your "Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities," 86 FR 68244. I am providing my input in a letter attached to this email.

My contact information is as follows:

[REDACTED]

Please do not hesitate to contact me if you have any questions on this matter.

Best regards,

-Luis

--

Luis Cruz
J.D. Candidate 2023
The George Washington University Law School

[REDACTED]

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

March 4, 2022

Ms. Alys Trunzo
Office of Spent Fuel and Waste Disposition,
Office of Nuclear Energy,
Department of Energy

Dear Ms. Trunzo,

I am Luis Cruz, an evening law student at The George Washington University Law School (GW Law). I write in response to your “Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities,” 86 FR 68244. I am currently working on a Note assignment as part of my work for the GW Law Review. The topic of my Note is environmental justice considerations in the consent-based siting of a nuclear waste repository. While my Note and research is focused on permanent disposal, not interim storage, there are general environmental justice and legal principles that would be applicable to both permanent disposal and interim storage of nuclear waste.

The Note is currently in progress, and I plan to complete it around mid-April 2022. At this time, I don’t have any publication plans for the Note, and expect it to remain internal to GW while in draft form. I can share more details on the Note and associated findings after completion. However, there are some recommendations that I have identified so far to inform DOE’s consent-based process for siting a nuclear waste disposal facility with environmental justice principles (*see* U.S. Dep’t of Energy, Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste (Jan. 17, 2019)). These recommendations can serve as response to Area 1, Question 1 of your RFI – How should the Department build considerations of social equity and environmental justice into a consent-based siting process? I am including these recommendations, as response to Area 1 Question 1, as Attachment 1.

Attached, I am also including an unnumbered list of the footnotes of my draft note, which may contain sources of interest in your effort in designing the consent-based siting process for interim storage, as Attachment 2. If you have any questions, you can contact me at [REDACTED]. My contact information can also be found in the email submitted with this RFI response.

Sincerely,

/s/ Luis Cruz
Luis Cruz
GW Law Student

Recommendations, and response to Area 1, Quesiton1:

The Note proposes issuing a joint policy statement between the Department of Energy and the Nuclear Regulatory Commission on how to incorporate environmental justice principles in the consent-based siting of a nuclear waste repository. These agencies already have independent policy statements and strategic plans on environmental justice broadly. A joint policy statement specific to environmental justice principles in the consent-based siting of a nuclear waste repository can be helpful to both agencies because it could guide the Department's siting process while it can also guide the Commission's subsequent environmental impact statement review during licensing. Furthermore, in the licensing of Yucca Mountain the Commission adopted the environmental impact statement developed by the Department of Energy, which contained the environmental justice analysis. A joint policy statement could be easier to implement and more appropriate than legislation and a rulemaking. The joint statement policy should address the following themes identified throughout this Note:

1. The consent-based process should remain a multi-step process with an opportunity to opt out at various points, up to the third or fourth step of the draft siting process.
2. The bulk of the environmental justice criteria should be considered at the initial step of the siting process where the Department of Energy is to award grants to communities interested in hosting a nuclear waste facility.
3. The Department of Energy must provide communities with an opportunity to review documentation of the Department's assessment at each step of the siting process.
4. The environmental justice criteria should use a minimum baseline of a four-mile radius as an affected area, in accordance with existing NRC guidance for nuclear material facilities. The Department must pursue a more detailed analysis if the affected communities have a population of fifty percent minority or low-income population, or a twenty percent increase from the state's percentage. Both the proposed radius and population percentages should serve as minimum requirements, and the agencies may opt to establish more conservative criteria or additional case-by-case considerations.
5. The Department of Energy should consider indirect effects of the proposed action to include, but not limited to, whether any roadways need to be altered to deliver spent nuclear fuel to the site, impact to the value of properties in the vicinity of the facility, and potential environmental impact during transportation spent fuel to the facility.

List of Footnotes (unnumbered)

¹ U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-21-603, COMMERCIAL SPENT FUEL: CONGRESSIONAL ACTION NEEDED TO BREAK IMPASSE AND DEVELOP A PERMANENT DISPOSAL SOLUTION 1 (2021) (hereinafter *GAO-21-603*); MARK HOLT, CONG. RESEARCH SERV., RL33461, CIVILIAN NUCLEAR WASTE DISPOSAL 30 (2021) (hereinafter *CRS Report RL33461*).

¹ GAO-21-603, *supra* note 1, at 1.

¹ EXEC. ORDER 12,898, FEDERAL ACTIONS TO ADDRESS ENVIRONMENTAL JUSTICE IN MINORITY POPULATIONS AND LOW-INCOME POPULATIONS, Section 1-101, 59 Fed. Reg. 7,629 (Feb. 11, 1994) (hereinafter *EO 12898*).

¹ BRC Consent-based definition on page 6; DOE consent-based definition on page 8.

¹ Blue Ribbon Commission for America's Nuclear Future, Report to the Secretary of Energy (hereinafter BRC Report), page vii (Jan. 2012). *See also* Bipartisan Policy Center, Moving Forward with Consent-Based Siting for Nuclear Waste Facilities: Recommendations of the BPC Nuclear Waste Council, 11 (Sept. 2016).

¹ U.S. Dep't of Energy, Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste, at cover (verify pin cite) (Jan. 17, 2019) available at <https://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf>

¹ *See* Draft Consent-Based Siting Process, at (pin cite).

¹ Fed. Reg. Vol. 86 No. 228, 68244 (Dec. 1, 2021). The comment submittal period concludes on March 4, 2021. This consent-based effort is specific to an interim storage facility, not a permanent disposal site. This effort, however, may provide an experimental approach on how to implement a consent-based process that incorporates environmental justice principles, which can inform the siting of a permanent repository facility.

¹ GAO-21-603, *supra* note 1, at 1.

¹ CRS Report RL33461, *supra* note 1, at 9. These contracts are governed by Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste, per 10 CFR Part 961.

¹ U.S. Dep't of Energy, Agency Financial Report fiscal Year 2021, DOE/CF-0180, 46–47 (Nov. 15, 2021), available at: https://www.energy.gov/sites/default/files/2021-11/fy-2021-doe-agency-financial-report_0.pdf.

¹ GAO-21-603, *supra* note 1, at 1.

¹ Bipartisan Policy Center, Moving Forward with Consent-Based Siting for Nuclear Waste Facilities: Recommendations of the BPC Nuclear Waste Council, 11 (Sept. 2016). *See also* BRC Report, 68 (identifying concerns on environmental and socio-economic impacts of a waste management facility in a hosting community).

¹ EO 12898, *supra* note 3. pin cite

¹ U.S. Nuclear Reg. Comm'n, NUREG 1748, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs," cover (verify pin cite) (2003).

¹ Eric Jantz, Environmental Racism with a Faint of Green Glow, *Natural Resources Journal*, Vol. 58 Issue 2, 257–59 (Summer 2017).

¹ Eric Jantz, Environmental Racism with a Faint of Green Glow.

¹ DOE EIA website. (identify site)

¹ The American Society of Mechanical Engineers, Landmarks - #47 Shippingport Nuclear Power Station, <https://www.asme.org/about-asme/engineering-history/landmarks/47-shippingport-nuclear-power-station>

¹ U.S. Nuclear Reg. Comm'n, 2021-2022 Information Digest, Page xii (October 2021), available at: <https://www.nrc.gov/docs/ML2130/ML21300A280.pdf>

¹ U.S. Dep't of Energy, NUCLEAR 101: How Does a Nuclear Reactor Work?, (Mar. 29, 2021), available at: <https://www.energy.gov/ne/articles/nuclear-101-how-does-nuclear-reactor-work>

¹ U.S. Department of Energy, NUCLEAR 101: How Does a Nuclear Reactor Work?

¹ U.S. Department of Energy, NUCLEAR 101: How Does a Nuclear Reactor Work?

¹ A metric ton of uranium equals 1,000 kg of uranium.

¹ CRS Report RL33461, *supra* note 1, at 30.

¹ Uranium, a primary component of nuclear fuel assemblies, is a heavy metal. World Nuclear Assn, What is Uranium? How Does it Work? (September 2021), available at: <https://www.world-nuclear.org/information-library/nuclear-fuel-cycle/introduction/what-is-uranium-how-does-it-work.aspx>.

¹ PUBLIC LAW 97-425-JAN. 7, 1983, Sec. 111 (b)(2). 42 USC 10131.

¹ PUBLIC LAW 97-425-JAN. 7, 1983, Sec. 112 (a). 42 USC 10132.

¹ PUBLIC LAW 97-425-JAN. 7, 1983, Sec. 112 (a). 42 USC 10132.

¹ PUBLIC LAW 97-425-JAN. 7, 1983, Sec. 114 (a)(4)(d)(2). 42 USC 10134.

¹ PUBLIC LAW 97-425-JAN. 7, 1983, Sec. 114 (f). 42 USC 10134, 42 U.S.C. 4321 et seq.

¹ PUBLIC LAW 97-425-JAN. 7, 1983, Sec. 114 (f). 42 USC 10134.

¹ PUBLIC LAW 97-425-JAN. 7, 1983, Sec. 121 (a)-(b). 42 U.S.C. 10141.

¹ PUBLIC LAW 97-425-JAN. 7, 1983, Sec. 121 (b). 42 U.S.C. 10141.

¹ PUBLIC LAW 97-425-JAN. 7, 1983, Sec. 114 (f). 42 U.S.C. 10134.

¹ Blue Ribbon Commission for America's Nuclear Future (hereinafter BRC), Report to the Secretary of Energy, page iv (Jan. 2012).

¹ U.S. Nuclear Regulatory Comm'n, Location of Yucca Mountain (Aug. 8, 2017), available at: <https://www.nrc.gov/waste/hlw-disposal/yucca-lic-app/photo-loc.html>.

¹ PUBLIC LAW 100-203-DEC. 22, 1987, Title V, Subtitle A, Sec. 160(a). 42 U.S.C. 10172.

¹ PUBLIC LAW 100-203-DEC. 22, 1987, Title V, Subtitle A, Sec. 161(a). 42 U.S.C. 10172a.

¹ PUBLIC LAW 100-203-DEC. 22, 1987, Title V, Subtitle A, Sec. 161(b). 42 U.S.C. 10172a.

¹ EO 12898, *supra* note 3, **at pincite**. (The relevant portion of implementation section reads: "[t]o the greatest extent practicable and permitted by law ... each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations")

¹ EO 12898, *supra* note 3, at Section 1-101.

¹ On January 27, 2021 the Biden administration issued a subsequent executive order, Exec. Order 14, 008, "Tackling the Climate Crisis at Home and Abroad," reaffirming the commitment to securing environmental justice in federal government action. **Fed. Reg. Vol. 86, No. 19, 7619** (Feb. 1, 2021). The 2021 EO also incorporated a mandate to spur economic development in disadvantaged communities. Particularly, the EO established a Justice 40 initiative directing that 40 percent of the overall benefits from certain federal investments flow to disadvantaged communities. Nuclear waste disposal facilities, however, were not included in the list of federal investments sought to benefit disadvantaged communities. Therefore, the principle of spurring economic development through the siting of nuclear waste disposal facilities is not considered in

this, Note as the 2021 EO implementation guidance did not incorporate nuclear waste disposal facilities. The Hill ,available at: <https://thehill.com/policy/energy-environment/553927-white-house-environmental-justice-advisors-expresses-opposition-to>

¹ EPA, Promising Practices for EJ Methodologies in NEPA Reviews (2016)

¹ See U.S. Dep't of Energy, Environmental Justice Strategy (Jan. 2017); U.S. Nuclear Regulatory Comm'n, Policy Statement on the Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions, 69 FR 52,040 (Aug. 24, 2004). While the Nuclear Regulatory Commission's policy statement indicates that EO 12898 does not apply to the Commission as an independent regulatory entity, it nonetheless adopts environmental justice considerations as part of its environmental impact statement analyses. (infra Section III.D)

¹ Backgrounder: Licensing Yucca Mountain, U.S. Nuclear Regulatory Comm'n, Office of Public Affairs (June 2018).

¹ Backgrounder: Licensing Yucca Mountain, U.S. Nuclear Regulatory Comm'n, Office of Public Affairs (June 2018).

¹ Backgrounder: Licensing Yucca Mountain, U.S. Nuclear Regulatory Comm'n, Office of Public Affairs (June 2018).

¹ See Geoffrey Brumfiel, America's Nuclear Dumpsters, *Slate* (Jan. 30, 2013, 1:27PM); Jeff Terry, From Flint to Yucca Mountain, politicized regulators are doing harm, *Bulleting of the Atomic Scientists* (June 8, 2016); Allison Macfarlane, The Yucca Mountain nuclear waste site has always been a political football. Trump is the latest president to fumble, *Bulleting of the Atomic Scientists* (Feb. 21, 2020).

¹ U.S. Court of Appeals for the District of Columbia Circuit, In re: Aiken County et al., No. 11-1271, writ of mandamus, August 13, 2013, available at: [http://www.cadc.uscourts.gov/internet/opinions.nsf/BAE0CF34F762EBD985257BC6004DEB18/\\$file/11-1271-1451347.pdf](http://www.cadc.uscourts.gov/internet/opinions.nsf/BAE0CF34F762EBD985257BC6004DEB18/$file/11-1271-1451347.pdf).

¹ Backgrounder: Licensing Yucca Mountain, U.S. Nuclear Regulatory Comm'n, Office of Public Affairs (June 2018).

¹ CRS Report RL33461, *supra* note 1, at 7.

¹ Blue Ribbon Comm'n for America's Nuclear Future (hereinafter *BRC*), Report to the Sec'y of Energy, page iv (Jan. 2012).

¹ BRC Report to the Sec'y of Energy, page vii (Jan. 2012).

¹ BRC Report to the Sec'y of Energy, page xx (Jan. 2012).

¹ BRC Report to the Sec'y of Energy, page ix (Jan. 2012).

¹ BRC Report to the Secretary of Energy, page ix (January 2012).

¹ BRC Report to the Secretary of Energy, page viii (Jan. 2012).

¹ BRC Report to the Secretary of Energy, page viii (January 2012); *see also id.*, pages 93-95.

¹ BRC Report to the Secretary of Energy, page viii (January 2012).

¹ BRC Report to the Secretary of Energy, page 52 (January 2012).

¹ BRC Report to the Secretary of Energy, page viii (January 2012)

¹ CRS Report RL33461, *supra* note 1, at 7.

¹ U.S. Dep't of Energy, *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Waste*, 1 (Jan. 2013). Available at:

<https://www.energy.gov/sites/prod/files/Strategy%20for%20the%20Management%20and%20Disposal%20of%20Used%20Nuclear%20Fuel%20and%20High%20Level%20Radioactive%20Waste.pdf>

¹ U.S. Dep't of Energy, *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Waste*, 9 (Jan. 2013).

¹ See U.S. Dep't of Energy, *Designing a Consent-Based Siting Process: Summary of Public Input Final Report*, 24 (Dec. 29, 2016).

¹ U.S. Dep't of Energy, *Designing a Consent-Based Siting Process: Summary of Public Input Final Report* (Dec. 29, 2016).

¹ See U.S. Dep't of Energy, *Invitation for Public Comment to Inform the Design of a Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities*, 80 Fed. Reg. 79872, (Dec. 23, 2015); U.S. Dep't of Energy, *Designing a Consent-Based Siting Process: Summary of Public Input Final Report*, (Dec. 29, 2016)

<https://www.energy.gov/sites/prod/files/2016/12/f34/Summary%20of%20Public%20Input%20Report%20FINAL.pdf>

¹ U.S. Dep't of Energy, *Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste*, at cover (verify pin cite) (Jan. 17, 2019) available at

<https://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf>

¹ *Draft Consent-Based Siting Process*, at 6.

¹ *Draft Consent-Based Siting Process*, at 9-13.

¹ *Draft Consent-Based Siting Process*, at 9, 11.

¹ U.S. Dep't of Energy, Office of Nuclear Energy, *Consent-Based Siting* (last accessed Jan. 29, 2022), available at: <https://www.energy.gov/ne/consent-based-siting>.

¹ U.S. Dep't of Energy, Office of Nuclear Energy, *Consent-Based Siting* (last accessed Jan. 29, 2022).

¹ Fed. Reg. Vol. 86 No. 228, 68244 (Dec. 1, 2021).

¹ Fed. Reg. Vol. 86 No. 228, 68244 (Dec. 1, 2021).

¹ Fed. Reg. Vol. 86 No. 228, 68244 (Dec. 1, 2021).

¹ BRC Report to the Secretary of Energy, page viii (Jan. 2012).

¹ CRS Report RL33461, *supra* note 1, at 18-27 (including S.1234 and S.2917 from the 116th Congress).

¹ US Environmental Protection Agency, *Environmental Justice* (last updated Dec. 16, 2021), available at: <https://www.epa.gov/environmentaljustice>.

¹ Matthew Cotton, *Environmental Justice as Scalar Parity: Lessons From Nuclear Waste Management*, *Social Justice Research*, 238, 241-242. ISSN 0885-74662018 (July 18, 2018).

¹ Cotton, *Environmental Justice as Scalar Parity*, 242.

¹ Cotton, *Environmental Justice as Scalar Parity*, 242.

¹ U.S. GOV'T ACCOUNTABILITY OFFICE, GAO/RCED 83-168, *SITING OF HAZARDOUS WASTE LANDFILLS AND THEIR CORRELATION WITH RACIAL AND ECONOMIC STATUS OF SURROUNDING COMMUNITIES 1-3* (1983); Steven Hoffman, *Negotiating Eternity: Energy Policy, Environmental Justice, and the Politics of Nuclear Waste*, *Bulletin of Science, Technology & Society*, Vol. 21, No. 6, 459 (Dec. 2001) (discussing the *Toxic Waste and Race in the United States* report from 1987). *But see* Steven Hoffman, *Negotiating Eternity*, 460 (identifying University of Massachusetts researchers who argue there is no significant pattern of racial discrimination in siting commercial hazardous waste facilities.)

¹ Steven Hoffman, *Negotiating Eternity*, 460; EO 12898, *supra* note 3, at pincite.

¹ Eric Jantz, Environmental Racism with a Faint of Green Glow, *Natural Resources Journal*, Vol. 58 Issue 2, 257–59 (Summer 2017).

¹ Louisiana Energy Services (LES) (1997) a successful environmental justice claim to halt the licensing of a facility containing nuclear materials (although it was not a nuclear waste repository). In 1997, the NRC’s Atomic Safety Licensing Board denied a license to the Claiborne Enrichment Center in Louisiana due to environmental justice concerns in siting. ML16011A516 - ASLB LES Decision, NRC Issuances Vol. 45.

¹ ML16011A516 - ASLB LES Decision, NRC Issuances Vol. 45. *See also* Eric Jantz, Environmental Racism with a Faint of Green Glow, *Natural Resources Journal*, Vol. 58 Issue 2, 257–59 (Summer 2017).

¹ Guidance on Considering Environmental Justice During the Development of Regulatory Actions, 9; *see also* APA, 5 USC Section 553(b).

¹ Guidance on Considering Environmental Justice During the Development of Regulatory Actions, 10.

¹ A search for cases addressing the term “meaningful involvement” only yielded three cases in the D.C. Circuit.

¹ *State of Ohio v. U.S. E.P.A.*, 997 F.2d 1520 (D.C. Cir. 1993).

¹ *State of Ohio v. U.S. E.P.A.*, 997 F.2d 1520, 1548 (D.C. Cir. 1993).

¹ *State of Ohio v. U.S. E.P.A.*, 997 F.2d 1520 (insert pin cite).

¹ U.S. Nuclear Regulatory Commission, Policy Statement on the Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions, 69 FR 52,040 (Aug. 24, 2004).

¹ U.S. Nuclear Regulatory Commission, NUREG 1748, “Environmental Review Guidance for Licensing Actions Associated with NMSS Programs,” cover (verify pin cite) (2003).

¹ NUREG 1748, at 1, and Appendix C, “Environmental Justice Procedures,” C-3.

¹ NUREG 1748, C-2.

¹ NUREG 1748, at C-4. The guidance also recognizes that a larger 50-mile radius is used for reactor facilities, which is consistent with the emergency planning zones for nuclear power reactor sites. 10 CFR § 50.47, Emergency plans; *see also* <https://www.nrc.gov/about-nrc/emerg-preparedness/about-emerg-preparedness/planning-zones.html>.

¹ The guidance defines minority as individuals in the following population groups: “American Indian and Alaska Native; Asian; Native Hawaiian and Other Pacific Islander; African American (not of Hispanic or Latino origin); some other race; and Hispanic or Latino (of any race).” NUREG 1748, at C-4. The guidance defines low-income communities as those “being below the poverty level as defined by the U.S. Census Bureau.” NUREG 1748, at C-4.

¹ NUREG 1748, at C-5.

¹ NUREG 1748, at C-5.

¹ NUREG 1748, at C-6.

¹ NUREG 1748, at C-6.

¹ The Commission issued the guidelines in 2004 and has used these in its licensing actions for nuclear material facilities, and such licensing actions have not been subsequently challenged in court due to environmental justice concerns.

¹ U.S. Dep’t of Energy, DOE/EIS-0250: Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada (Feb. 2002).

¹ U.S. Nuclear Regulatory Commission, Review of DOE's Environmental Impact Statement for Yucca Mountain (last updated June 8, 2020), available at: <https://www.nrc.gov/waste/hlw-disposal/historical-information/reg-initiatives/review-envir-impact.html>

¹ U.S. Dep't of Energy, DOE/EIS-0250, at 3-1.

¹ U.S. Dep't of Energy, DOE/EIS-0250, at 3-3.

¹ U.S. Dep't of Energy, DOE/EIS-0250, at 3-3. The Department of Energy followed Interim NRR Procedure for Environmental Justice Reviews (DIRS 103426-NRC1995).

¹ U.S. Dep't of Energy, DOE/EIS-0250, at 3-3.

¹ U.S. Dep't of Energy, DOE/EIS-0250, at 3-3, 4-86.

¹ U.S. Dep't of Energy, DOE/EIS-0250, at 4-88.

¹ Section 6-609, Judicial Review, of EO 12898, *supra* note 3, states:

This order is intended only to improve the internal management of the executive branch and is not intended to, nor does it create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity by a party against the United States, its agencies, its officers, or any person. This order shall not be construed to create any right to judicial review involving the compliance or noncompliance of the United States, its agencies, its officers, or any other person with this order. 59 FR 7629 (Feb. 11, 1994).

¹ See *Vecinos para el Bienestar de la Comunidad Costera v. Fed. Energy Reg. Comm'n*, 6 F.4th 1321, 1330 (D.C. Cir. 2021).

¹ A search for “environmental justice” in WestLaw only yielded 14 cases using the term in the DC Circuit. The cases encompass a time frame from 2003 to 2021.

¹ *Vecinos para el Bienestar de la Comunidad Costera*, 6 F.4th 1321, 1330 (D.C. Cir. 2021).

¹ *Vecinos para el Bienestar de la Comunidad Costera*, 6 F.4th 1321, 1331 (D.C. Cir. 2021).

¹ *Vecinos para el Bienestar de la Comunidad Costera*, 6 F.4th 1321, 1330 (D.C. Cir. 2021).

¹ *Vecinos para el Bienestar de la Comunidad Costera*, 6 F.4th 1321, 1330 (D.C. Cir. 2021).

¹ *Vecinos para el Bienestar de la Comunidad Costera*, 6 F.4th 1321, 1330 (D.C. Cir. 2021).

¹ U.S. Nuclear Regulatory Comm'n, NUREG 1748, Appendix C, “Environmental Justice Procedures,” C-4. A more detailed discussion of the Nuclear Regulatory Commission’s environmental justice assessments for nuclear material facilities can be found under Section III.D.

¹ *Vecinos para el Bienestar de la Comunidad Costera*, 6 F.4th 1321, 1330 (D.C. Cir. 2021).

¹ Allan Hedin, Spent nuclear fuel - how dangerous is it?, Technical Report 97-13, pages vi-viii (Mar. 1997). The spent nuclear fuel has a lower heat output and is stored in canisters in arrays that prevent them from causing a nuclear reaction.

¹ *Sierra Club v. Federal Energy Regulatory Commission*, 867 F.3d 1357, 1363 (2017).

¹ *Sierra Club v. Federal Energy Regulatory Commission*, 867 F.3d 1357, 1363 (2017).

¹ *Sierra Club v. Federal Energy Regulatory Commission*, 867 F.3d 1357, 1375 (2017).

¹ *Sierra Club v. Federal Energy Regulatory Commission*, 867 F.3d 1357, 1371 (2017).

¹ ML16011A516 - ASLB LES Decision, NRC Issuances Vol. 45. See also Eric Jantz, Environmental Racism with a Faint of Green Glow, *Natural Resources Journal*, Vol. 58 Issue 2, 257–59 (Summer 2017).

¹ See e.g., Joint DOE/EPA Interim Policy Statement on Leasing Under the “Hall Amendment,” (1998) available at: <https://www.epa.gov/fedfac/joint-doeepa-interim-policy-statement-leasing-under-hall-amendment> ; Joint NRC-EPA Guidance on a Conceptual Design Approach for

Commercial Mixed Low-Level Radioactive and Hazardous Waste Disposal Facilities: Action Memorandum (1987).

¹ <https://www.nrc.gov/materials/fuel-cycle-fac/mou.html>

¹ CRS Report RL33461, *supra* note 1, at, 18–27 (including S.1234 and S.2917 from the 116th Congress).

¹ S.2917, 116th Congress, Nuclear Waste Policy Amendments Act of 2019 (Nov. 20, 2019).

¹ S.1234, 116th Congress, Nuclear Waste Administration Act of 2019 (April 30, 2019).

¹ BRC Report to the Secretary of Energy, page viii (January 2012); *see also* id., pages 93-95.

¹ BRC Report to the Secretary of Energy, page viii (Jan. 2012).

From: Leonard curcuru
Sent: Wednesday, December 1, 2021 1:19 PM
To: Consent Based Siting
Subject: [EXTERNAL]

Send all spent fuel to Yucca Mountain.
Rename it Temporary Storage.
Why reinvent the wheel.
Plan B, expand storage at the waste storage facility in New Mexico.
Announce all spent fuel still contains a vast amount of fuel to be burned in fast reactors.
Explain this would be enough fuel to last for a thousand years.
Announce all "Long lived fission products" will be transmuted in molten salt fast reactors to reduce it's
radioactive life from thousands of years to three hundred years.
Stress we have an obligation to future generations to destroy these wastes as soon as possible.

Leonard Curcuru

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

From: [REDACTED]

Sent: Saturday, February 19, 2022 4:45 AM

To: Consent Based Siting

Subject: [EXTERNAL] RFI: Consent-based Siting and Federal Interim Storage

To Whom it May Concern:

My concerns regarding the temporary storage are practical matters regarding length of time the dangerous material is “temporarily stored” and the ability of man to do the right thing for the next million years to protect it. It ain’t gonna happen. Here is why:

Loss of institutional control anytime over the next million years would mean the potential for catastrophic releases of hazardous radioactivity into the environment, which would harm people and other living things downwind, downstream, up the food chain, and down the generations, potentially out to great distances, depending on wind- and water-driven flow over long periods of time. Indefinitely long, to permanent, surface storage at federal CISFs would require active features which in my opinion can not be maintained going forward for such an extremely long length of time.

The most serious and inevitable risk if the U.S. Department of Energy were to take ownership of commercial highly radioactive nuclear waste before a permanent geologic repository opens: federal Consolidated Interim Storage Facilities would likely become Consolidated Permanent Surface Storage, that is, de facto Above-Ground Permanent Disposal, or Parking Lot Dumps.

Indefinitely long, to permanent, surface storage at federal CISFs would remain dangerously accessible, risking unintentional/accidental, but nonetheless catastrophic, releases of hazardous ionizing radioactivity, as due to container degradation/failure over time, extreme weather disasters due to climate chaos, etc. However, intentional releases, as due to an act of war, terrorist attack, or sabotage, are also possible. So too is theft/diversion of weapons-usable materials, risking proliferation of nuclear weaponry and/or radiological “dirty bombs.”

Indefinitely long, to permanent, surface storage at federal CISFs, would result in intergenerational inequity, a form of environmental injustice.

Federal CISFs would be a dangerous dead-end detour on the road to a scientifically/ technically, and socially acceptable, repository. Federal CISFs would also constitute a radical reversal of long established U.S. policy, law, regulation, and court precedent, which has held the private owners of commercial irradiated nuclear fuel responsible for its interim storage, while the federal government (that is DOE, using first nuclear ratepayer, then ultimately **federal taxpayer**, funds) is responsible for permanent disposal.

Nuclear power should be phased out and abolished, so that no more highly radioactive waste will be generated. We need to stop making it in the first place. If the storage and taxpayer expenses were factored in, it would be the most expensive, detrimental energy we could possibly produce. However, for highly radioactive irradiated nuclear fuel (INF) that already exists, hardened on-site storage (HOSS), or hardened near-site storage, is the best interim measure, not CISFs. HOSS, or hardened near-site storage, is the preferred interim alternative, not CISFs.

Sincerely,

Elizabeth Darden

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From: Ann Darling
Sent: Tuesday, March 1, 2022 12:53 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: DoE RFI A Darling 03-01-2022.pdf

Attached please find my comments on DoE's Request for Information related to consent-based siting of federal interim storage facilities for nuclear waste (86 Fed. Reg. 68,244, December 1, 2021).

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TO: Office of Spent Fuel and Waste Disposition, Office of Nuclear Energy, U.S. Depart. of Energy

FROM: Ann Darling, Easthampton, MA, Citizens Awareness Network

DATE: March 1, 2022

SUBJECT: Request for Information related to consent-based siting of federal interim storage facilities (86 Fed. Reg. 68,244, December 1, 2021)

Greetings. My name is Ann Darling, and I live in Easthampton, MA. I lived in the Brattleboro, VT, area for almost all of the operating life of Vermont Yankee (VY), and I have participated in the Vermont Nuclear Decommissioning Citizens Advisory Panel meetings as a member of the public since the Panel was formed about 7 years ago. Easthampton, MA is south of VY on the Connecticut River (decommissioning with NorthStar). It is also close to Rowe Atomic (decommissioned), Pilgrim Nuclear (being decommissioned by Holtec), Millstone 1, 2, and 3 (#1 shut down, #2 and #3 still operating), and Indian Point (decommissioning with Holtec). I am also a Board member for the Citizens Awareness Network, which is a member of the National Radioactive Waste Coalition.

Citizens Awareness Network supports the HarmonCurran/Beyond Nuclear/et al. request to withdraw, revise, and re-publish your RFI for Consent-Based Siting Process (dated 2/15/22), and it also will sign on to any comments Beyond Nuclear (and possibly other organizations) may make if the RFI is not withdrawn. My comments here are in addition to any submitted by Beyond Nuclear et al.

In general, **I find the RFI to be currently illegal and fundamentally illogical.** The NWPA forbids siting an interim facility if there is no permanent repository. At a meeting of the Vermont NDCAP 2/28/22, a DoE representative (Dr. Petry) stated that, with this consent-based siting RFI, DoE is preparing for a time when a permanent repository is sited. Further, she said that DoE anticipates a change in the NWPA to allow a federal interim storage facility. The fact remains that a prospective host community simply cannot provide fully informed consent for a CISF if it does not know how long the highly radioactive materials will be there. You may find communities that don't care about that, but I maintain that you shouldn't even be asking for consent prior to having a permanent repository sited and a stable source of ongoing funding appropriated so that communities know exactly what they're getting into. Short of that, DoE needs to inform prospective host communities of the impact of ionizing radiation on human and other life, and the maintenance that would be needed to keep the CISF safe as radiation ages the site.

Dr. Petry also stated that nuclear power is necessary for addressing climate change. This simply is not true. Nuclear power is a net carbon emitter from mining to milling/refining to power generation and finally to waste management. Nuclear power does not currently make enough power to help with a transition to solar, wind, hydro, storage, etc. Building more nuclear power plants, including SMRs, will take far more time than the world has to address climate change. And then there will be even more waste to manage. All the resources going into expanding nuclear should instead be going into expanding carbon-free, nuclear-free energy sources that can be managed in a locally controlled smartgrid. I think DoE needs to ask yourselves why you have bought into the nuclear industry propaganda on this and do some soul-searching.

Dr. Petry also stated that reactor communities want the waste gone. I'm sure many do, without thought of the consequences for others. I'm also sure that many people want the waste gone **but know it doesn't just disappear and don't want it polluting someone else's backyard**, especially the "backyards" that are already poisoned with radioactive waste, mostly BIPOC and lower-income communities. The DoE and the industry have never seriously considered hardening the waste on-site or

close by (in the case of San Onofre, for instance) to make it safer from attack/sabotage and weather/earthquakes. But if it stays where it is, it would only have to be moved once to a permanent repository, with a lot less risk and expense. Why is it that this option has not been explored and comparative cost analyses done (i.e. moving to CISF and moving again vs. hardening on-site and moving only once)? Why aren't the reactor communities being educated about the nuclear waste in their midst and the different options for dealing with it, including HOSS, so that there is consent for continuing to host it, or not. Why aren't there federal resources going to bringing reactor communities and waste host communities together so we can learn from each other and make informed decisions about what to do? All those things are expensive, of course, but I believe this rush to consolidate interim storage (with no deep geologic burial in place and no consideration of HOSS) is because the nuclear industry wants to re-process the radioactive waste and the federal government wants to have access to it for weapons. Profits and the drive for US geopolitical dominance once again trump safety and sanity.

Dr. Petry also stated that DoE and the Nuclear Regulatory Commission (NRC) have separate lanes, that these lanes do not come together often, and that it is not in DoE's purview to consider the NRC in its deliberations. **I made the case at the meeting that this "separate lanes" concept is a recipe for distrust by the public; it's talking out of both sides of your mouth.** On the one hand, you have DoE saying it's just dealing with developing a federal interim storage facility and doesn't have anything to say about the private ones being developed (Interim Storage Partners and Holtec) but that you (DoE) believe that consent-based siting is the way to go. On the other hand, you have the NRC having given (or about to give in Holtec's case) a license to build a private interim storage facility, which DoE might or might not include in the federal waste management system. This license has been given over vocal local, state, and tribal disagreement with siting interim facilities on the Texas/New Mexico border (near WIPP and a reprocessing facility). These bureaucratic distinctions between different agencies of the government don't mean a whole lot to people; they just know that the federal government is once again not listening.

Further, as long as the NRC holds federal pre-emption over states and local government on nuclear safety, people know their concerns about safety can be and have been shut down. This is a real problem for truly consent-based siting. (Case in point – Entergy sued the State of Vermont over its law forbidding an extension of VY's license and won because some legislators simply talked about safety in their deliberations, even though mention of safety was not included in the statute.) As I said at the NDCAP meeting, **DoE has a lot of work to do to rebuild trust.** Why let the NRC sabotage your work? Why not have an independent agency or office overseeing this process, one that can hold other federal agencies to account -- one that has real and significant citizen participation.

From: Leshinskie, Anthony
Sent: Thursday, March 3, 2022 11:46 AM
To: Consent Based Siting
Subject: [EXTERNAL] Consent-Based Siting Process Comments from the Vermont Nuclear Decommissioning Citizens Advisory Panel
Attachments: VT-NDCAP_Aproved_Advisory_Opinion_2022-02-28_DOE_RFI_Consent-Based_Siting_Response_Letterhead.pdf

To Whom It May Concern:

The attached comments are submitted on behalf of the Vermont Nuclear Decommissioning Citizens Advisory Panel in response to the Department's December 2021 'Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities.' These comments were developed through the Panel's Advisory Opinion process, which the Panel uses to advise the Vermont Governor, General Assembly, State Agencies and the public on issues related to the decommissioning of the Vermont Yankee Nuclear Power Station. These comments were approved by the Panel at a Special Meeting held on February 28, 2022.


Presentations and other details from this meeting are available at the Panel website:
<https://publicservice.vermont.gov/electric/ndcap>.

Questions regarding these comments may be sent to the Panel's email address or by contacting the Vermont State Nuclear Engineer, who serves as the Panel's Administrator.

Best regards,

Tony Leshinskie

Anthony R. Leshinskie
State Nuclear Engineer & Decommissioning Coordinator
Vermont Public Service Department


A tiny spec of VT government functioning along the CT-MA Border
<https://publicservice.vermont.gov/electric/ndcap>
<https://publicservice.vermont.gov/content/vermont-yankee-decommissioning>

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State of Vermont**Nuclear Decommissioning Citizens Advisory Panel****c/o Department of Public Service**

112 State Street

Drawer 20

Montpelier, VT 05620-2601

PSD.NDCAP@vermont.gov**<https://publicservice.vermont.gov/electric/ndcap>**

[phone]: (802) 828-2811

[fax]: (802) 828-2342

[tty]: Leave message at (800) 622-4496 via Relay Service

March 3, 2022

US Department of Energy

Office of Nuclear Energy

1000 Independence Ave. SW

Washington DC 20585

Re: Comments on the U.S. Department of Energy 'Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities'

To Whom It May Concern:

The Vermont Nuclear Decommissioning Citizens Advisory Panel submits the enclosed comments (Advisory Opinion) in response to the Department's December 2021 'Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities.' These comments were approved by the Panel at a Special Meeting held on February 28. Presentations and other details from this meeting are available at the Panel website: <https://publicservice.vermont.gov/electric/ndcap>.

Additionally, the Panel wishes to thank Dr. Kim Petry, Dr. Erica Bickford, Ms. Natalia Saraeva and Mr. Rob Howard of the Department for their presentation and supporting discussion at our February 28 meeting.

Thank-you for your consideration. We appreciate the opportunity to share these comments with the Department and look forward to further interactions as the Consent-Based Siting Process progresses.

Sincerely yours,

/s/ Emily Davis

Emily Davis, 2022 Panel Chair

Vermont Nuclear Decommissioning Citizens Advisory Panel

Advisory Opinion Adopted February 28, 2022**Comments on the U.S. Department of Energy ‘Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities’****INTRODUCTION**

The Vermont Nuclear Decommissioning Citizens Advisory Panel (VT NDCAP) appreciates the opportunity to share information and insights on ‘Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities’ and associated questions upon which the Department of Energy (DOE) seeks public input.

BACKGROUND ON VT NDCAP

The 19 member VT NDCAP was established by an act of the Vermont legislature in 2014. It includes six citizen members, two each to be appointed by the Governor, the Senate President Pro Tempore and the House Speaker, as well as representation from eleven additional Vermont Yankee decommissioning stakeholder organizations, including the plant owner and the town where the facility resides, to oversee decommissioning of the Vermont Yankee nuclear reactor, share information with and receive feedback from the public.

In December 2020, the VT NDCAP voted to establish a committee to learn more about nuclear spent fuel storage and disposal concerns. The resulting Federal Nuclear Waste Policy Committee (FNWPC) met monthly in 2021 and continues to meet, studies federal policy options for nuclear waste storage and considers how Vermont Yankee is situated within the national landscape. By methodically procuring input from Vermont’s federal delegation, industry experts and other stakeholders, the FNWPC accordingly advances the learning goals of VT NDCAP by sharing findings with the full Panel at regularly scheduled meetings. The Committee may recommend that the VT NDCAP adopt Committee-approved draft advisory language for the full VT NDCAP’s consideration and potential vote in order to fulfill the Panel’s stated purpose under Vermont law to: "advise the Governor, General Assembly, the agencies of the state, and the public on issues related to decommissioning."

Some individual VT NDCAP members plan to submit independent information to DOE that may reflect different perspectives on how the US should solve the problem of where and how to store the nation’s high level radioactive waste. The value of this document is that it reflects basic agreement among Committee members on the following points, voted on at a special session of the full VT NDCAP on February 28, 2022, a recording of which is available at:

<https://youtu.be/W7ZAHGUaD4M>

DOE RFI Area 3: Interim Storage as Part of a Waste Management System / Questions: 3 and 4:
To what extent should development of an interim storage facility relate to progress on establishing a permanent repository? What other issues should DOE consider in developing a waste management system?

In 2015, the Congress authorized a two-year consent-based siting process for the general siting for nuclear waste disposal facilities that was not limited to ‘interim’ sites. The process to date has not resulted in a successful siting of any waste disposal facilities. VT NDCAP believes management of the nation’s nuclear waste management system must not depend upon inconsistent congressional appropriations.

VT NDCAP recommends that development of a consolidated interim storage facility (CISF) should remain directly coupled to establishing a permanent repository as required under the Nuclear Waste Policy Act. In developing an integrated waste management system, VT NDCAP believes that DOE and the Administration should focus on amending existing law rather than relying on agency rulemaking.

Appropriate geomorphology and geohydrology of potential site selection for a permanent repository should be a limiting and qualifying factor in any consent-based siting. Prioritizing locations with sound environmental suitability will likely aid in establishing public acceptance and trust to obtain consent-based siting. With proper planning, moving high level radioactive waste from independent fuel storage installations (ISFSIs) should only happen one time. Any CISF(s) to be constructed and operated should ideally be sited at or in close proximity to a location that is also acceptable and approved for a permanent deep geologic repository. Any CISF or permanent repository should be subject to the same EPA standards other energy producers must adhere to.

Further, asking a community to consent to act as an ‘interim’ site in the absence of any progress toward a permanent site will continue to undermine confidence in the DOE ‘consent-based siting’ process.

The VT NDCAP supports the application of the consent-based siting process to any previously designated high level radioactive waste disposal or storage sites.

DOE RFI, Area 2: Removing Barriers to Meaningful Participation / Question 5:
What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Communities, governments, local stakeholders, and the nation at large need more information before deciding on the best course of a functioning integrated nuclear waste management system. The Nuclear Regulatory Commission says such waste is safely and securely stored at its current location. An independent and comprehensive economic analysis from the Congressional Budget Office or

General Accounting Office on options for nuclear waste should inform how to proceed.

All public comments received in DOE's 2015 to 2017 Consent-Based Siting effort should be available for public review and be considered as part of the DOE's current Request for Information.

ADVISORY OPINION VOTING RECORD

PANEL MEMBERS VOTING YES

Madeline Arms (Town of Vernon); Todd Amato (Town of Vernon); Chris Campany (Windham Regional Commission); Sara Coffey (Citizen Appointee); Emily Davis (Citizen Appointee & Panel Chair); Marvin Resnikoff, Ph.D. (Citizen Appointee); Lissa Weinmann (Citizen Appointee & FNWPC Chair).

PANEL MEMBERS VOTING NO

None.

PANEL MEMBERS VOTING TO ABSTAIN

Corey Daniels (NorthStar Vermont Yankee); David Pearson (NorthStar Vermont Yankee); Jim Porter (VT Public Service Department Designee).

PANEL MEMBERS ABSENT FOR THIS VOTE

Trish Coppolino (VT Agency of Natural Resources); Dr. Bill Irwin (VT Agency of Human Services); Bob Leach (Citizen Appointee); Brett Long (VT Agency of Commerce and Community Development); Mark MacDonald (Vermont Senate); Laura Sibilila (Vermont Legislature); Josh Unruh (Citizen Appointee & Panel Vice-Chair).

There are currently two vacancies on the Panel.

END

From: Dean, Janice A (NYSERDA)
Sent: Thursday, March 3, 2022 8:33 AM
To: Consent Based Siting
CC: Bembia, Paul J (NYSERDA); Peterson, Alyse L (NYSERDA)
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage - NYSEERDA comments
Attachments: NYSEERDA comments to DOE RFI consent based siting.pdf

Attached please find comments of the New York State Energy Research and Development Authority on the RFI relating to Consent-Based Siting and Federal Interim Storage.

Thank you,
Janice Dean

Janice A. Dean
Deputy General Counsel

NYSEERDA
17 Columbia Circle | Albany, NY 12203-6399

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Comments of the New York State Energy Research and Development Authority

The New York State Energy Research and Development Authority (NYSERDA) appreciates this opportunity to share comments on the United States Department of Energy's (DOE or the Department) Request for Information (RFI) regarding Consent-Based Siting and Federal Interim Storage. NYSERDA participated in DOE's Consent-Based Siting public comment opportunity in 2015 as well and incorporates a number of its comments from that proceeding here. NYSERDA supports the Department's initiative, its focus on collaborative decision-making with states, and offers the following feedback on the specific questions asked in the RFI.

NYSERDA serves a number of nuclear waste-related functions for New York State: it holds the operating license at the Western New York Nuclear Service Center, a site owned in trust for the People of the State of New York that was used as the home of a short-lived nuclear fuel reprocessing facility run by Nuclear Fuel Services, and one now under cleanup in partnership with DOE under the West Valley Demonstration Project Act. NYSERDA also serves as New York's nuclear coordinator and Nuclear Regulatory Commission State Liaison Officer (SLO). The Governor-appointed SLO serves as the key person in each state to keep the Governor informed on the wide variety of issues under the NRC's jurisdiction and provides the NRC with state information, policies, positions, comments, and other input relevant to NRC's work. Similarly, New York State's own legislation (Section 7-101 of the New York State Energy Law) directs NYSERDA to coordinate State programs affecting nuclear and radiological activities in the State and to develop State positions with respect to federal government programs affecting those activities. Additionally, NYSERDA serves as New York's primary agency for overall radioactive waste policy and maintains a program for monitoring generation, storage, treatment and disposal of low-level radioactive waste.

As an initial matter, as the owner of a site housing orphaned defense waste (both high level waste and transuranic waste), NYSERDA strongly urges the Department to reconsider its decision to reduce the scope from the Department's 2016 consent-based siting initiative, which sought comments on DOE's vision for an integrated waste management system that would provide for the safe and secure transportation, storage, and disposal of the nation's spent nuclear fuel (SNF) and high level waste (HLW), to the 2021 notice that seeks comment only on consolidated storage of SNF.¹

NYSERDA offers the following comments in response to specific questions asked in the RFI.

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

¹ NYSERDA is aware of a letter sent by more than fifty environmental and tribal organization stakeholders dated February 15, 2022, seeking rescission of the RFI in favor of a clearer process. We support the principles stated in that letter, have made certain of the same points within these comments, and would look forward to participating in any additional phases of this process. See Letter, Diane Curran Esq., to the DOE Office of Spent Fuel and Waste Disposition (Feb. 15, 2022).

NYSERDA offers New York's legislative approach here for the Department's consideration. Through the creation of diverse stakeholder working groups, a council of New York decisionmakers is collaboratively deciding New York's energy future, with a required mandate of benefitting disadvantaged communities. We suggest that framing the inquiry in terms of what can benefit historically disadvantaged communities in the nuclear waste space may be a framework worth exploring.

In 2019, New York enacted the Climate Leadership and Community Protection Act (the "Climate Act"). Under this statute, New York works to ensure that all New Yorkers are represented in the State's transition to a cleaner energy future and benefit from investments and opportunities provided by this historic transition. In this way, the Climate Act seeks to address some of the same historic inequities and challenges to meaningful stakeholder engagement as the Department's current initiative, and its structure may be informative to the Department. The Climate Act created a Climate Action Council, co-chaired by NYSERDA's President and CEO and the Commissioner of the Department of Environmental Conservation. The statutory structure involves a number of advisory groups representing a diverse and inclusive set of stakeholder views.

Of relevance to the Department's current initiative, the Climate Justice Working Group tasked with defining "disadvantaged communities" is comprised primarily of representatives from environmental justice communities statewide, including three members from New York City communities, three members from rural communities, and three members from urban communities in upstate New York, as well as four state agency representatives, from the Departments of Environmental Conservation, Health, Labor, and NYSERDA. We would suggest that the Department may benefit from a similar engagement in communities currently hosting operating or shut-down nuclear waste sites and weapons complex facilities, as well as those communities that may consider becoming host communities for interim storage sites. We also suggest that partnering with existing state stakeholder processes such as New York's Climate Justice Working Group may be of value to the Department, as discussed further within these comments. Nuclear waste sites and weapons complex facilities create legacy environmental justice issues around the country, with intergenerational impacts that will be compounded by those impacts posed by climate change to many of the same communities.

Any consideration of interim site host state locations should consider the benefits and impacts to historically impacted communities, as defined by a body made up of representatives of these communities and defining the disadvantaged communities in a way that reflects the true breadth of these communities as relevant to nuclear waste as an environmental burden.

How New York Defines Disadvantaged Communities

New York focuses specifically on "disadvantaged communities" impacted by historic energy policy. We suggest that this definition may aid the Department in identifying communities within which to build strong local relationships. The Climate Act identifies disadvantaged communities based on geographic, public health, environmental hazard, and socioeconomic criteria, which includes but are not limited to:

- i. areas burdened by cumulative environmental pollution and other

hazards that can lead to negative public health effects;

ii. areas with concentrations of people that are of low income, high unemployment, high rent burden, low levels of home ownership, low levels of educational attainment, or members of groups that have historically experienced discrimination on the basis of race or ethnicity; and

iii. areas vulnerable to the impacts of climate change such as flooding, storm surges, and urban heat island effects.²

Whatever methodology the Department uses to define disadvantaged or underserved communities, we suggest that the definition itself be crafted in partnership with members of those communities. We would further emphasize that the process of identifying disadvantaged communities, and the changes to federal programs to address disparate impacts, should be a collective process that engages government and community stakeholders across a spectrum of disciplines, including housing, transportation, etc. as recognized in the definition of underserved communities included in President Biden's Executive Order 14035 on Diversity, Equity, Inclusion, and Accessibility in the Federal Workforce, 86 Fed. Reg. 34593 (June 25, 2021) to which the Department is subject.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

In consent-based siting, Tribal, State, and local governments should all be consulted if located near, or proposed to host, a waste facility. Host state and community input should play a dispositive role; a facility should not be sited absent the consent of these governmental host actors. However, the Department should clarify what consent looks like among these differing levels of government, there are often differing views, and economic burdens and opportunities fall to each in different ways. The process should identify what constitutes consent among differing views.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

Full Departmental recognition of State and Tribal law and treaties, as well as State regulatory authority should be a baseline for any potential engagement. Federal agency overriding of state or local laws or policies should not be contemplated within a Consent Based Siting Rubric; if

² NY ECL Art. 75, § 0111 (1)(c). The Climate Justice Working Group will soon release a revised final definition for public comment, which will be made available at climate.ny.gov.

host governmental actors wish to make needed changes to accommodate the benefits of a proposed facility, those actions should be taken by the host actors themselves.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

The length of time it takes to site a complex facility, during which time local governments and state governorships change hands, can be a barrier to successful siting of federal interim storage facilities. The new office-holders and their administrations may have different views and positions than their predecessors, creating a potential barrier to consistent stakeholder input into any one facility's siting process. Clear procedures that are established pursuant to public input well before a facility is put forward for siting will help give interested stakeholders and affected governmental units an understanding of the process, opportunity for public comment along the way, permits and licenses that are needed, and other relevant information.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

As the United States Court of Appeals for the District of Columbia Circuit has acknowledged, "failing to secure permanent storage [is] a possibility that cannot be ignored."³ As such, the Department should acknowledge, in its interim storage planning, the uncertainty surrounding the length of time for which interim storage may be needed, and address community concerns around such uncertainty, as well as provide robust environmental reviews that take into account the potential for indefinite storage, in line with the D.C. Circuit's reasoning in *New York v. NRC*⁴. The Department has a wealth of information available through the Office of Environmental Management's (EM) experience and relationships with stakeholders at existing weapons complex and related sites. The Office of Nuclear Energy should partner with EM to craft lessons learned from these decades of often adversarial relationships, and best practices developed.

7. What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

As relates to the orphaned transuranic waste at West Valley, NYSERDA suggests that this process be expanded to include the consolidated interim storage of the West Valley transuranic waste stream. This will allow the transuranic waste that has been stored at West Valley for decades in temporary above-ground facilities to be properly stored for a more appropriate period of time in storage more appropriate to the waste's characteristics. A summary of the issue at West Valley, and the argument in favor of classifying West Valley waste as

³ *New York v. Nuclear Regulatory Com'n*, 681 F.3d 471 (D.C. Cir. 2012).

⁴ *Id.*

defense waste such that it can take its rightful place in the queue of existing transuranic waste planning, is attached as Exhibit A.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

A barrier to a consent-based siting process is that public input and exchange, in routine decision-making process, can be easily dismissible by the agency as it advances a final decision, rendering the public with little ability to impact outcomes. The idea that federal agencies need a new relationship with stakeholders in order to move key priorities forward is gaining traction at other agencies right now, and is applicable in this process as well. The staff at the Nuclear Regulatory Commission (NRC) recently retained the Harvard Negotiation and Mediation Clinical Program to evaluate ways in which the NRC could improve upon its existing contested hearing process for advanced reactors in a way that is more resource- and time-efficient than the existing process, consistent with principles of good regulation (including openness, efficiency, and reliability), and the NRC's dedication to "working effectively with all stakeholders, clearly communicating its requirements, and providing regulatory information and feedback in a timely manner".⁵ The Harvard study noted that "[i]ndustry members are frequently better funded and better represented in politics and in the [license] application process than intervenor groups, creating a power imbalance and mistrust".⁶ Harvard employed a definition of "meaningful" public participation that we suggest may be helpful in this context as well: meaningful participation is "participation that has a reasonable chance of affecting the outcome of a process."⁷

For that reason, defining "consent" in this context removes any barrier that may relate to misunderstanding the role that stakeholders will play in Consent Based siting. We also suggest that understanding the source of tension between host states and DOE through EM will again remove any historic barriers in states and on tribal territories that already host legacy waste. While some states are able to approach the issue anew, other states like New York have long working relationships with the Department, with lessons to be drawn from past interactions.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

We suggest that a number of the Department's existing priorities be continued here, including leveraging existing public meetings for information sharing, and publishing information in multiple languages, targeted to particular communities in different regions as appropriate. We

⁵ USNRC, Publication of Harvard Negotiation and Mediation Clinical Program (HNMCP) Report, "Moving Toward A Framework For Contested Hearings In The Licensing Of Advanced Reactors," Prepared For The NRC December 2020 and Nrc Staff Response [sic] (June 2021) ("Harvard Report"). See Exhibit B.

⁶ Harvard Report at 5.

⁷ *Id.* at 5, n.4.

also suggest outreach using a number of current-day methods, like maintaining a strong social media presence across different platforms, is an easy way to reach a diverse set of stakeholders who don't monitor the Department's website or the Federal Register. Additionally, all notices and materials about this issue should be written in plain language and without jargon or undue numbers of acronyms.

We suggest that exploring the use of objective sources of information (i.e., not sourced from individuals or organizations standing to gain financially from the site at issue, or Department staff sponsoring the initiative) may also be important so communities can obtain unbiased information about both historical storage and current technologies. A mechanism for ongoing questions and answers – a hotline, or a live chat – may aid members of the public who are unable to attend scheduled Q&A sessions. Likewise, video access to the meetings posted online with transcripts affords those with disabilities, or work schedules/family obligations that don't accommodate long public meetings the opportunity to hear community discourse.

Also, in its recent environmental justice request for comments,⁸ the NRC published a website listing the outreach measures it had undertaken, so commenters could point out any gaps.⁹ We found this approach to be a very positive and helpful step towards full transparency, and suggest that the Department offer the same information here.

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

We suggest that the Department approach each local, State, and Tribal government by, first and foremost, taking into account their historic relationship with Department-affiliated environmental justice concerns, and/or legacy waste storage. Certainly, any discussion of waste in New York State is informed by the failed national reprocessing effort sited through a not dissimilar process at West Valley, Washington State and Oregon affiliated with Hanford, and the Navajo Nation informed by its longstanding relationship with the Department related to uranium mining. Any going-forward effort must be grounded in the past in this regard, with specific measures taken to address any historic inequalities or unexpected problems that have arisen with regard to existing storage. Additionally, the Department should identify benefits to disadvantaged communities specifically, and communities that have suffered harm, loss of economic growth potential, or other impacts from prior energy decision-making.

The Department might consider establishing a framework that allows potential host communities and governmental entities to organize and work together as a single entity, if they so choose, to participate in discussions with DOE on the establishment of an interim storage facility. An example for this type of interaction would be the Office of Environmental Management's support of and work with the State and Tribal Government Working Group and National Governors Association Federal Facilities Task Force

⁸ Nuclear Regulatory Commission, Systematic Assessment for How the NRC Addressed Environmental Justice in Its Programs, Policies, and Activities, 86 Fed. Reg. 36307 (July 9, 2021).

⁹ See <https://www.nrc.gov/about-nrc/regulatory/licensing/environmental-justice/public-outreach.html>.

Likewise, the Department must acknowledge that in the absence of a permanent repository after decades of failed attempts, local, State and Tribal governments have reason to be concerned about interim storage becoming permanent. The Department must partner this interim effort with continued long-term storage planning and investments.

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Access to technical and administrative process assistance – that is, objective technical advice and help navigating the administrative system (understanding the regulatory process, perhaps through clear and easily understandable white papers or websites) will aid stakeholders in understanding an effort of this magnitude. This could be done by providing objective experts at Department cost, by providing stakeholder funding so communities and under-resourced state or local governments can obtain these resources themselves, or by other similar means. A model that may be helpful here is the New York State Department of Public Service’s intervenor funding program process for the siting of major electric generating facilities in New York State,¹⁰ under which applicants are required to provide funds to be used to defray certain expenses incurred by municipal and local parties as they participate in the pre-application scoping process and in the proceeding before the Siting Board. Intervenor funds can be used to pay for expert witnesses, consultants, administrative costs (such as document preparation and duplication) and legal fees. No intervenor funds may be used to pay for appeals of Siting Board decisions or other matters before a court. More information about this process is provided in New York Public Service Law section 163,¹¹ and in the guide provided in note 9.

Area 3: Interim storage as Part of a Waste Management System

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

As we note above, the Department must acknowledge that in the absence of a permanent repository after decades of failed attempts, local, State and Tribal governments have reason to be concerned about interim storage becoming permanent. The Department must partner this interim effort with continued long-term storage planning and investments, and tether the development of new nuclear technologies to the availability of a waste solution such that the generation of additional legacy sites is no longer an option.

¹⁰ For a straightforward description of how this program works, see The Fund for Municipal and Local Parties: A Guide to Intervenor Funding Pursuant to Article 10 of the Public Service Law, available at [https://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/6fd11ce8db088a2785257e200054a99b/\\$FILE/Guide%20to%20Intervenor%20Funding%201-30-18.pdf](https://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/6fd11ce8db088a2785257e200054a99b/$FILE/Guide%20to%20Intervenor%20Funding%201-30-18.pdf)

¹¹ <https://codes.findlaw.com/ny/public-service-law/pbs-sect-163.html>

Exhibit A

to

NYSERDA's Comments in Response to
The United States Department of Energy's Request for Information (RFI)
regarding Consent-Based Siting and Federal Interim Storage

DEFENSE ORIGIN OF THE NUCLEAR MATERIALS PROCESSED AND THE WASTES GENERATED AT THE WEST VALLEY NEW YORK SPENT NUCLEAR FUEL REPROCESSING FACILITY

I. Introduction

The New York State Energy Research and Development Authority (NYSERDA) holds title to the Western New York Nuclear Service Center (Center) in southwestern New York State. The facility was created through federal and state programs in the early 1960s and is the location of the only non-federally owned, commercially-operated, spent nuclear fuel reprocessing facility to operate in the United States. It is New York State's position that West Valley high-level radioactive waste (HLW) and transuranic waste (TRU) resulted "from atomic energy defense activities" as defined in the Nuclear Waste Policy Act (NWPA) – *i.e.*, they are "defense waste" – and are therefore eligible for disposal in the same manner, and in the same facilities, as other U.S. Department of Energy (DOE) defense HLW and TRU. If DOE were to properly recognize the defense origin of the West Valley wastes, the West Valley TRU would be eligible for disposal at the federal government's Waste Isolation Pilot Project (WIPP), and the State of New York would be relieved of the payment of an excessively large fee for disposing of the West Valley HLW. These results would properly be consistent with not only the applicable law but also with the root intent of the parties as expressed since the beginning of West Valley operations more than 50 years ago.

This paper clarifies the origin and legal status of the HLW and TRU stored at the Center by the DOE West Valley Demonstration Project (WVDP)¹ and requests that DOE properly classify the West Valley waste as waste that resulted from "atomic energy defense activities."

¹ Public Law 96-369 (1980).

II. History of West Valley Activities

A. Spent Nuclear Fuel Reprocessing at West Valley

At the end of the Second World War, the federal government was solely responsible for atomic energy activities in the United States. In keeping with the federal government's desire to establish a civilian nuclear power industry, DOE's predecessor, the U.S. Atomic Energy Commission (AEC), established a program to commercialize the reprocessing of spent nuclear fuel (SNF). As part of that commercialization program, the AEC embarked upon an initiative to make classified reprocessing technology available to private industry and committed to provide assistance in the form of a baseload of SNF – largely from defense-related sources – until additional civilian nuclear power plants could be constructed. The AEC program also allowed the use of AEC facilities for development work and training.²

The AEC's commercialization program led W.R. Grace and Company to establish Nuclear Fuel Services, Inc. (NFS) for the purpose of designing, building, and operating a SNF reprocessing facility on New York State-owned property near the hamlet of West Valley, approximately 25 miles south of the city of Buffalo. Because the AEC determined that a private entity was an improper long-term steward for the waste,³ and at the request of the AEC, in 1963 NFS submitted an amendment to its application for an operating license indicating that New York retained ownership of the site⁴ and agreed to provide perpetual care for the waste.

² U.S. DOE, Western New York Nuclear Service Center Companion Report, TID21905 (1978) at pp. 1-3. Copies of any information referenced in these comments are available from NYSERDA.

³ Letter, Robert Lowenstein, Director, Division of Licensing and Regulation, Atomic Energy Commission, to Oliver Townsend, Chairman of the New York State Atomic Safety and Development Authority (Feb. 13, 1963).

⁴ *In the Matter of Nuclear Fuel Services, Inc., and New York State Atomic Research and Development Authority*, Amendment No. 1 to the Application for Licenses of the New York State Atomic Safety and Development Authority (Apr. 9, 1963); *see also* Letter, Oliver Townsend, Chairman of the New York State Atomic Safety and Development Authority, to Robert Lowenstein, Director, Division of Licensing and Regulation, Atomic Energy Commission, In Re: Nuclear Fuel Services, Inc. et al., Application for Licenses, AEC Docket No. 50-201 (, 1963).

The NFS reprocessing facility at West Valley, which operated from 1966 to 1972, was the only SNF reprocessing facility in the United States operated by an entity other than the federal government. After operating for six years, NFS shut down the facility to make modifications and process improvements. At this same time, the AEC was considering significant regulatory changes that would have required the solidification of high-level reprocessing wastes within five years of generation, shipment of the solidified waste to a federal repository within 10 years, and changing the seismic design considerations for fuel cycle facilities.⁵ It was unclear whether the existing, highly contaminated West Valley facilities would have met these new seismic requirements.⁶ Given that uncertainty, and the estimated \$600M cost of potential compliance, NFS announced in 1976 that it was withdrawing from the reprocessing business and would turn the West Valley reprocessing facility over to New York State.

During Congressional deliberations that followed the NFS announcement, the West Valley site was recognized as “an artifact” of a premature federal program.⁷ In fact, by the time the federal government’s new policy on the solidification and shipment of reprocessing wastes was fully developed in 1971, 600,000 gallons of liquid HLW had already been placed in long-term storage in West Valley’s underground tanks.⁸ Had the federal government established its national policy regarding reprocessing facilities and wastes prior to the design, construction and

⁵ See Rochlin, G., et al., Bulletin of the Atomic Scientists, *West Valley: Remnant of the AEC* (“Remnant of the AEC”) (Jan. 1978), 22-25, citing Siting of Commercial Fuel Reprocessing Plants and Related Waste Management Facilities; Statement of Proposed Policy, 34 Fed. Reg. 8712 (June 3, 1969).

⁶ New York Congressman Lundine expressed doubt that the West Valley site could comply with the new seismic regulations for storage of waste. Hearings Before the Subcommittee on the Environment and the Atmosphere of the Committee on Science and Technology, 95th Congress, First Session, June 15, 16, 1977, No. 20 at 74 (“1977 Hearing”).

⁷ Statement of N. Richard Werthamer, Chairman of NYSERDA, to the Environment and the Atmosphere Subcommittee of the House Committee on Science and Technology Regarding Nuclear Reactor Decommissioning, U.S. Nuclear Regulatory Commission (June 15, 1977) (1977 Hearing at 3).

⁸ *Id.*

operation of the West Valley facility, the design of the plant would likely have been “altered considerably.”⁹

B. The West Valley Demonstration Project

i. *The West Valley Demonstration Project Act*

Between 1976, when NFS ceased operations at West Valley, and 1980, the future of West Valley wastes was unclear. During that time, there were extensive state and federal discussions regarding what to do with the West Valley site, and whose responsibility it would be. In 1978, Congress directed DOE to conduct a study of options for West Valley. The options included federal aid for the clean-up, federal operation of the clean-up, and permanent federal ownership of the site.¹⁰ The DOE study acknowledged the pervasive federal role in the creation of the reprocessing facility and indicated that DOE was neutral between the option of federal operation of the site and federal ownership of the site.¹¹

After this study was completed, Congressional hearings were held on decommissioning, decontaminating, and remediating West Valley. Congressional discussion during this time period is replete with references to the federal government’s responsibility for the site and the defense character of the waste at West Valley.

For example, Dr. John M. Deutch, then-Acting Secretary for Energy Technology at DOE, described the waste at West Valley to a Congressional subcommittee as “high-level waste which contain[s] both commercial and military wastes[.]”¹² He explained that discussions had begun

⁹ *Id.* at 60 (statement of Richard Cunningham, Acting Director, Fuel Cycle and Material Safety, Nuclear Regulatory Commission).

¹⁰ The Department of Energy Act of 1978 – Civilian Applications, Public Law 95-238 (Feb. 25, 1978), section 105.

¹¹ U.S. DOE, Western New York Service Center Study, Final Report for Public Comment, TID 21905-1, 1978, at 39.

¹² Department of Energy Fiscal Years 1980-81 Authorization, Hearings Before the Senate Subcommittee on Energy Research and Development of the Committee on Energy and Natural Resources, Statement of Dr. John M. Deutch, Acting Assistant Secretary for Energy Technology at the Department of Energy (96th Cong., Mar. 9 – Apr. 5, 1977) at 981.

between DOE and NYSERDA concerning the future of West Valley, whereby “The Department of Energy would be responsible for the overall management and responsibility associated with the cleanup of the site” and that “[t]he Federal Government would agree to accept responsibility for the ultimate removal of spent fuel and high-level wastes from the site when a Federal repository was available.”¹³ On March 19, 1980, Senator Moynihan introduced the West Valley Demonstration Project Act (WVDPA).¹⁴ Senator Moynihan reiterated Dr. Deutch’s point in hearings of the Senate Subcommittee on Nuclear Regulations on his bill, stating that “[it] is understood [] that the Federal Government has taken over as a matter of policy, has agreed to assume responsibility at West Valley.”¹⁵

Similarly, on the House side, in the House Oversight Hearing before the Subcommittee on Energy and the Environment, Committee on Interior and Insular Affairs, DOE’s then-Acting Deputy Assistant Secretary for Energy Technologies Worth Bateman acknowledged that damaged high level fuel elements from defense activities at Hanford were sent to West Valley.¹⁶ Congressman Lundine noted that three-quarters of material reprocessed at West Valley was defense waste under the AEC baseloading agreement.¹⁷ NYSERDA’s then-President stated the same in sworn testimony to the same Congressional subcommittee.¹⁸

In subsequent hearings, the House Committee on Interstate and Foreign Commerce repeatedly stated in the WVDPA deliberations that the activities at West Valley had been, in large part, defense related. In particular, the committee stated:

¹³ *Id.* at 982.

¹⁴ Public Law 96-369 (1980).

¹⁵ *Hearings Before the Senate Subcommittee on Nuclear Regulations of the Committee on Environment and Public Works*, 96th Cong. 240 (1979) (statement of Senator Moynihan).

¹⁶ Oversight Hearing before the Subcommittee on Energy and the Environment, Committee on Interior and Insular Affairs, Amending The Department of Energy Authorization Bill For Fiscal Year 1980, Regarding Remedial Action At West Valley, New York (May 31, 1979) (“1979 Hearing”) at 20.

¹⁷ *Id.* at 18.

¹⁸ *Id.* at 42.

The Committee recognizes that a substantial quantity of this waste was produced in the course of fulfilling contracts with the Atomic Energy Commission and that most of such contracts were related to the military program. Because of the extensive past Federal involvement, the Committee is willing to have the government pay 90 percent of the cost of the project.¹⁹

The defense-related activities at West Valley were so significant to the consideration of the bill that the committee reiterated the point, stating,

Most of the reprocessing activities which occurred at the site were performed under contracts with the Atomic Energy Commission, and *a majority of these were a part of the military, as opposed to the commercial, program*. Because of this, and because of the benefits which will accrue to the Federal government as a result of demonstrating solidification technologies, this Committee has provided a greater Federal contribution than would normally be provided to a typical remedial action program.²⁰

Similarly, Senator Moynihan, the WVDPA's sponsor and one of its most active proponents, explained in a 1982 interview, after the WVDPA was passed, that the reason why "the [federal] taxpayer [is] footing most of the bill" is that "the greatest share of the waste was placed at West Valley by the Defense Department"²¹

In 1980, Congress passed the WVDPA, which directed DOE to conduct and pay 90 percent of the costs of a high-level waste solidification and decommissioning demonstration project at the Western New York Nuclear Service Center. The project would include the following tasks:

- carry out a demonstration project to solidify the high-level radioactive waste in the underground tanks;
- develop containers suitable for the disposal of the solidified high-level waste;

¹⁹ Committee on Interstate and Foreign Commerce Report on the West Valley Demonstration Project Act, No. 96-100, Part II, 96th Cong. (Sept. 15, 1980) at 14 (emphasis added).

²⁰ *Id.* at 15 (emphasis added). *See also* Statement of Representative Dingell, 126 CONG. REC. 25351 (1980) ("Furthermore, the past extensive Federal involvement in the development and operation of the re-processing activities at the site distinguishes this program from a typical remedial action program. Over 70 percent of the spent fuel reprocessed on the site was under contract with the Atomic Energy Commission, and most of this was for the military as opposed to the commercial programs") and 126 CONG. REC. 25353, Statement of Representative Royer ("The waste at West Valley is a result of both military activities and civilian reprocessing.").

²¹ Reitz, Tom, *Success of West Valley Project Holds Key to Future of Nuclear Power*, Springville J. (Mar. 4, 1982).

- transport the solidified waste to a federal repository for permanent disposal;
- dispose of low-level and transuranic waste; and,
- decontaminate and decommission the facilities used in the solidification process.²²

ii. *The Cooperative Agreement*

The WVDPA also required DOE to enter into a Cooperative Agreement with NYSERDA, which holds the West Valley site in trust for New York State.²³ The Cooperative Agreement grants DOE exclusive use and possession of the central 200 acres of the site, including most of the facilities containing radioactive materials, and restates DOE's obligation to decontaminate and decommission all facilities and premises used in conducting the project. The Cooperative Agreement also obligates NYSERDA to turn over the so-called "perpetual care fund," established in a 1963 Waste Storage Agreement between NYSERDA's predecessor, the New York State Atomic Research and Development Authority, and NFS,²⁴ to DOE upon delivery of the WV HLW to an appropriate federal repository for disposal.²⁵ NYSERDA obtained the perpetual care fund as part of a settlement between NYSERDA and NFS after NFS ceased operations, and has maintained the fund in an interest bearing account since that time. As of March 31, 2016, the fund contains \$29.2 million.

iii. *The West Valley Demonstration Project*

²² Public Law 96-368.

²³ *Id.*; the DOE-NYSERDA Cooperative Agreement is available here:

http://www.wv.doe.gov/WVDP_WWW/Document_Index/DOE_NYSERDA_Cooperative_Agreement.pdf

²⁴ See Waste Storage Agreement, New York State Atomic Safety and Development Authority and Nuclear Fuels Services, Inc. (May 15, 1963).

²⁵ Notably, as explained in the Congressional record in years prior to the Cooperative Agreement's execution, "[t]he funding arrangement contemplated only the eventual transfer of the waste to new tanks, in perpetuity, and did not consider facility decommissioning during the early part of the license term." 1977 Hearing at 60 (Remarks of Richard Cunningham, Acting Director, Fuel Cycle and Material Safety, U.S. Nuclear Regulatory Commission).

Since the WVDPA was passed more than 30 years ago, DOE has made significant progress at the site. DOE completed the solidification of the high-level waste in 2002²⁶ (more than 98 percent of the liquid HLW was removed from the underground waste storage tanks and solidified into 19,000 drums of cemented low-level waste and 275 high-level waste glass canisters²⁷); the 19,000 drums of cemented low-level waste were successfully shipped to the Nevada Test Site for disposal; and the high-level waste glass canisters, which are contained in stainless-steel containers, are stored in shielded casks at an interim HLW storage facility constructed by DOE at the site.

DOE is presently conducting “Phase 1” decommissioning activities at West Valley, including demolition of the Vitrification Facility, waste processing and shipping, and the removal of contaminated systems, equipment, and asbestos from the massive, highly contaminated Main Plant Process Building in preparation for demolition.²⁸ DOE has stated that the HLW canisters will be stored at West Valley until a HLW repository is available to accept the canisters for permanent disposal, which could be decades away.

III. The Nuclear Waste Policy Act

Only two years after Congress passed the WVDPA and before the work of the WVDP had even begun, Congress passed the Nuclear Waste Policy Act (NWPA) in response to the accumulation of SNF at commercial reactors. The NWPA, as amended, provides, *inter alia*, a framework for the development of HLW repositories and establishes a program of research, development, and demonstration regarding the disposal of HLW and SNF. As part of that framework, the NWPA provides that “[t]he costs resulting from permanent disposal of high-level

²⁶ <http://www.nyserderda.ny.gov/Cleantech-and-Innovation/West-Valley/West-Valley-Demonstration-Project>

²⁷ *Id.*

²⁸ *Id.*

radioactive waste from atomic energy defense activities should be paid by the Federal Government.”²⁹ The NWPA also defines “atomic energy defense activity” as “any activity of the Secretary performed *in whole or in part*” in carrying out, among other things, “defense nuclear materials production, defense nuclear waste and materials by-products management, and defense research and development.”³⁰ As discussed in Section V.A, below, the historical record shows that NFS conducted, in part, “defense nuclear materials production” at West Valley, and by virtue of conducting that activity, NFS also conducted “defense nuclear waste and materials by-products management” at West Valley (as DOE does today). In addition, as discussed in Section V.B (below), records in NYSERDA’s possession strongly suggest NFS also conducted “defense research and development” at West Valley. The historical record on the NFS operation at West Valley is extensive and demonstrates that the radioactive wastes at West Valley were generated as a result of “atomic energy defense activities.”

IV. State and Federal Discussions Regarding Disposal of West Valley HLW

Despite the statements in the legislative history of the WVDPA and the facts described in Section VI below, DOE presently asserts that West Valley HLW is “commercial waste”³¹ – *i.e.*, that the HLW at West Valley is *not* “from atomic energy defense activities” and therefore a fee for ultimate disposal of the waste should be borne by the State. But DOE held a different position on the disposal fee issue prior to 1986 (1986, notably, was approximately the same time

²⁹ 42 U.S.C. § 10107(b)(2).

³⁰ 42 U.S.C. § 10101(3)(emphasis added). Legislative history indicates the Congressional view that the NFS operation at West Valley was a research and development effort. *See* 1979 Hearing at 2 (Comments of Chairman Udall).

³¹ U.S. Department of Energy, Assessment of Disposal Options for DOE-Managed High-Level Radioactive Waste and Spent Nuclear Fuel (Oct. 2014), at v (“Commercial waste (e.g., HLW at West Valley ...) is not eligible for a repository exclusively for DOE-managed HLW and SNF from defense or DOE research and development activities.”).

that DOE realized that the NFS perpetual care fund would not be sufficient to cover the costs of disposal).

In 1983, when the perpetual care fund contained approximately \$6 million, and shortly after the execution of the Cooperative Agreement, Robert Morgan, DOE's Project Director of the Nuclear Waste Policy Act Project Office, stated in a letter to NYSERDA that, "[t]here is every indication that the perpetual care fund that will transfer to DOE upon completion of the project ... will adequately cover the estimated disposal costs of the solidified wastes."³² Furthermore, he recognized that DOE would manage the waste after it was delivered to a repository.³³

In 1986, however, DOE's Inspector General (IG) issued a report on civilian contributions to the Nuclear Waste Storage Fund. In that report, the IG estimated West Valley HLW disposal costs to be \$68.7 million and stated – without any apparent factual analysis of the kinds of wastes or activities that had been undertaken at the site – that DOE and the State of New York were required to enter into a fee contract for the costs of disposal.³⁴ This was the first time that DOE had indicated that the State would have to pay disposal fees in addition to what was held in the perpetual care fund, and, moreover, it was the first time DOE had designated the HLW at West Valley as non-defense waste under the NWPA. The IG's report acknowledged that the Cooperative Agreement required the State to turn over the perpetual care fund to DOE in 1997, and that DOE had assumed this fund with interest would adequately cover the estimated disposal costs of the solidified wastes, but nevertheless stated that an agreement regarding additional fees was required.³⁵ DOE's 1986 change in position, contemporaneous with its significant upward

³² Letter, Robert L. Morgan, Project Director, Nuclear Waste Policy Act Project Office, U.S. Department of Energy, to William Cotter, Chairman, New York State Energy Research and Development Authority (June 27, 1983).

³³ *Id.*

³⁴ U.S. Department of Energy, Office of Inspector General, Report on Accuracy of Fees Paid by the Civilian Power Industry to the Nuclear Waste Fund, DOE/IG-0231 (Oct. 27, 1986) ("IG Report").

³⁵ IG Report at 11-12.

revision to the estimated disposal costs, sparked nearly 20 years of unsuccessful discussion and negotiation between DOE and NYSERDA to resolve this issue.

V. Atomic Energy Defense Activities at the West Valley Site

A. DOE Records and Other Public Records Indicate Atomic Energy Defense Activity

In addition to the statements in the legislative history regarding the defense-related character of West Valley activities, records in NYSERDA's possession and that NYSERDA has inspected show that the radioactive material shipped to and from West Valley was, in significant part, defense-related.

During its six years of operation, the NFS West Valley facility reprocessed approximately 640 metric tons of SNF. NYSERDA's review of the facility's historical records shows that approximately 25 percent of the SNF reprocessed at West Valley came from civilian nuclear power plants, and 15 percent came from research facilities or other power reactors under contract to the federal government. The majority of the fuel (60 percent or 380 metric tons) came from the N-Reactor at the federal government's Hanford facility in Washington State under the AEC baseload agreement with NFS.

The N-Reactor was a "dual-use" nuclear reactor which generated plutonium for the nation's nuclear weapons program as well as electricity for the Washington Public Power Supply System.³⁶ NFS records from the time show that initial shipments of N-Reactor fuel sent to West Valley for reprocessing in 1966 had very low burn-ups, indicative of fuel from the N-Reactor

³⁶ Gerber, M., *The Plutonium Production Story At The Hanford Site: Processes And Facilities History* (June 1996) ("The Plutonium Production Story"), at 2-10 (indicating that in 1971, N-Reactor was ordered closed due to a diminished national need for defense plutonium production, making clear that defense plutonium production took place at the site in years prior).

that was intended for plutonium-production.³⁷ Records also show that the first two lots of N-Reactor fuel were received at West Valley for reprocessing prior to the initiation of electrical generation operations at the N-reactor, meaning that irradiated fuel, originating from the N-Reactor at the time it was in its weapons-production-only mode, was reprocessed at West Valley.

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The NFS West Valley plant produced plutonium nitrate and uranyl nitrate solutions. Approximately 80 percent of the plutonium nitrate recovered by NFS at West Valley was shipped directly back to Hanford.³⁹ As part of a directive from the DOE Secretary in the early 1990s to declassify plutonium information, DOE reviewed information on the plutonium provided to the AEC from West Valley.⁴⁰ DOE's analysis showed that, of the 1,530 kg of plutonium received by the AEC from the West Valley facility, 635 kg originated from fuel or reactors that were AEC-owned and 895 kg came from commercial power-reactor fuel.⁴¹ Of the 635 kg of AEC-origin plutonium, 534 kg of plutonium came from N-Reactor; 95 kg from the NFS facility in Erwin, TN; and 6 kg from the Bonus Reactor, an AEC-owned demonstration reactor in Puerto Rico.⁴² DOE's 1996 report specifically acknowledges that not all of the recovered plutonium was used in the breeder reactor and zero power reactor programs at Hanford.⁴³ In addition, NFS records from the time show that the Pu-239 content of the initial

³⁷ E.R. Johnson Associates Inc., *Review of the Operating History of the Nuclear Fuel Service, Inc. West Valley, New York Irradiated Fuel Processing Plant* (Dec. 26, 1980), Table 4-1 (Draft). The two, low burnup lots represent 20% of the N-Reactor reprocessing campaigns at West Valley.

³⁸ NFS Fuel Reception and Storage Logbook, p. 32, entries of shift staff Hartwell and Mosher, dated 3-11-1966.

³⁹ Plutonium & Uranium Recovery from Spent Fuel Reprocessing by Nuclear Fuel Services at West Valley, New York from 1966 to 1972, U.S. Department of Energy (Feb. 1996), available at <http://pbadupws.nrc.gov/docs/ML1219/ML12194A610.pdf> (last accessed May 2, 2016) ("Plutonium Recovery Report").

⁴⁰ *Id.*

⁴¹ *Id.* at 1.

⁴² *Id.* at 13.

⁴³ *Id.* at 14 (stating that "[m]ost of the plutonium was used in the breeder reactor and zero power reactor programs.") (emphasis added).

shipments of plutonium nitrate to Hanford was very high (greater than 98 percent Pu-239), indicative of material that would have been used for weapons production.⁴⁴

In addition to plutonium, over 1.3 million pounds of uranium were recovered by NFS at West Valley for reuse. Approximately 99.8 percent of this uranium was shipped to the AEC's Fernald Feed Materials Production Center in Ohio.⁴⁵ This facility produced "high purity metals products for the U.S. defense program."⁴⁶ Fernald received enriched, natural and slightly depleted uranium from various sources, and processed those materials into uranium metal products for use by other sites in the nation's nuclear weapons complex.⁴⁷ At Fernald, slightly depleted uranyl nitrate solution (the form of the uranium received from NFS West Valley) was converted, through a number of chemical processes, to a uranium metal mass called a "derby."⁴⁸ Most of the Fernald derbies were melted into ingots, which were then extruded, heat treated, and machined into "target element cores."⁴⁹ The depleted uranium target element cores were shipped to the AEC's Savannah River Site, where they were bombarded with neutrons in the K-Reactor.⁵⁰ Through the neutron-capture process in the K-Reactor, the uranium-238 in the target

⁴⁴ Plutonium Recovery Report at 10-12, 15; *see also* NFS shipping records in NYSERDA's possession and available upon request. For background, Pu-239 is the desirable isotope in weapons material along with a low Pu-240 content; Pu-240 is unwanted in nuclear weapons material. The more time that the fuel spends in the reactor, the more Pu-240 that is created in the spent fuel. AEC specifically "burned" fuel in the reactor for a much shorter time when they were looking to make weapons-grade plutonium. Regarding fuel entering West Valley, low burnup fuel is an indication of fuel that was "burned" for a weapons purpose; likewise, for recovered plutonium departing West Valley, a high Pu-239 content is indicative of weapons-grade material.

⁴⁵ *See* Plutonium Recovery Report at 2, indicating that 619.1 metric tons of uranium (MTU) out of 620 MTU was shipped directly to Fernald, and that the remaining 0.9 MTU of Highly Enriched Uranium was shipped to the Oak Ridge Y-12 plant.

⁴⁶ U.S. EPA Region 5 Superfund Fact Sheet, *available at* https://www3.epa.gov/region5/superfund/npl/sas_sites/ohio/OH6890008976.html (last visited May 9, 2016).

⁴⁷ *See* Fernald Production Processes and Products, https://www.lm.doe.gov/land/sites/oh/fernald_orig/50th/fppp.htm

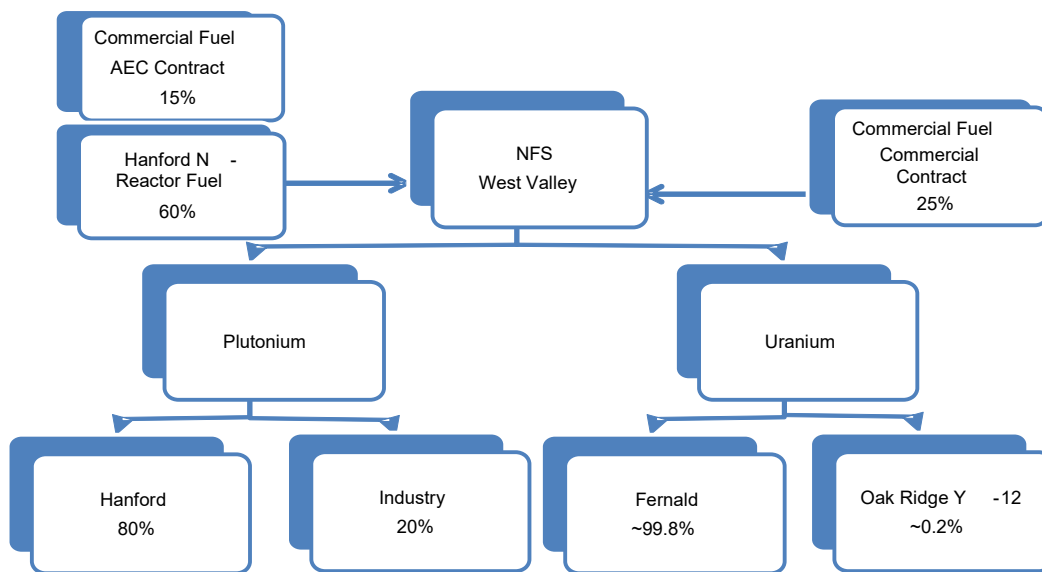
⁴⁸ *Id.*

⁴⁹ *Id.*, and NIOSH, Feed Materials Production Center – Site Description, ORAU Team Dose Reconstruction Project, ORAUT-TKBS-0017-1, Rev 1, 2014.

⁵⁰ *See* Figure F.5, Head of the K Reactor, found at <http://nonuclear.se/deltredici.f5.k.reactr.head.html>

element cores was converted into weapons-grade plutonium-239. The remaining 0.2 percent of the uranium recovered at West Valley (in the form of U-233) was shipped to the Oak Ridge Y-12 facility in Tennessee.⁵¹

Figure below illustrates the origins and destinations of the nuclear materials processed and recovered during the NFS operation, and shows the integrated nature of the NFS West Valley facility with the nation's nuclear weapons complex. Figure 2 is a detailed flow diagram showing the sequence of events whereby the 1.3 million pounds of depleted or low-enriched uranium recovered by NFS at West Valley would have been used in the weapons production process via the Fernald Feed Materials Production Center.



⁵¹ Plutonium Recovery Report at 2.

These contracts, combined with other publicly available information, makes clear the defense-related nature of activities at West Valley. In particular:

- (1) NFS employees were cleared through AEC channels, allowing for the dissemination of reprocessing information and information pertaining to the N-Reactor fuel elements, and another clearance path allowed NFS personnel to have access to Department of Defense (DOD) classified information at the SECRET level and below;⁵³
- (2) NFS was subject to regular inspections by the Defense Supply Agency (DSA), the first of which in available records was conducted on August 19, 1966 and focused on the security measures surrounding DOD classified information housed and generated within the West Valley facility;⁵⁴ and,
- (3) in order to properly secure and maintain control of classified information, NFS established security protocols with the United States Post Office in West Valley, New York, which explicitly states that only three individuals were cleared to receive registered mail from either the AEC or the Air Force.⁵⁵

to Archival Databases www.archives.gov (last accessed May 9, 2016). None of the six known U.S. Air Force contracts were synopsized, in accordance with Armed Services Procurement Regulation 1-1003.1 Exception 1, which states:

Classified procurements, where the information necessary to be included in the Synopsis would disclose classified information or where the mere disclosure of the Government's interest in the area of the proposed procurement would violate security requirements, shall not be publicized in the Synopsis.⁵²

From publically available records at the National Archives it is possible to discern the potential nature of the contracts, based upon their federal supply class descriptions. Of the six contracts, three involved surveillance, two exploratory development, and the final contract provided consultant services.

⁵³ See Standard Practice Procedures Manual, Department of Defense Security Rules, Nuclear Fuel Services, Inc., 8.1-14, Rev. 3 (undated) at 3; *see also* Memorandum, R.B. Kelly, NFS Security Officer, to Employees Authorized to Use AEC Classified Documents (Sept. 25, 1970).

⁵⁴ Letter, Defense Supply Agency to NFS (Aug. 29, 1966) (summarizing DSA findings during an audit conducted on August 19, 1966).

⁵⁵ Letter, Milton A. Ausman to U.S. Post Office, West Valley, New York (Aug. 20, 1970).

This information and additional information that NYSERDA is seeking through requests for information to the Air Force and National Archives provide strong indicia that defense-related activities took place at West Valley, and it is reasonable to infer that the materials received and shipped from the facility were related to those defense activities.

C. Energy Employee's Occupational Illness Compensation Program

The federal government's Energy Employee's Occupational Illness Compensation Program (EEOICP) was established in 2001 to compensate individuals with a broad range of work-related illnesses throughout the Department of Energy's nuclear weapons complex.⁵⁶ Although DOE asserts that the West Valley waste is commercial waste, EEOICP materials identify the site during the period of 1966 through 1973 as an "atomic weapons employer⁵⁷." In addition, DOE's Office of Environment, Health, Safety, and Security webpage for the EEOICP⁵⁸ includes the following information:

West Valley Demonstration Project

Also known as: Nuclear Fuels West Valley

Also known as: Western New York Fuel Services Center

State: New York

Location: West Valley

Time Period: Atomic Weapons Employer 1966-1973, Residual Radiation 1974-1979, DOE 1980 to present

Facility Type: Atomic Weapons Employer/Department of Energy

Facility Description: From 1966 to 1972, Nuclear Fuel Services, Inc., under contract to the State of New York, operated a commercial nuclear fuel reprocessing plant at the Western New York Nuclear Services Center. The plant reprocessed uranium and plutonium from spent nuclear fuel; sixty percent of this fuel was generated at defense facilities.

⁵⁶ PUBLIC LAW 106-398—OCT. 30, 2000, NATIONAL DEFENSE AUTHORIZATION, FISCAL YEAR 2001

⁵⁷ <https://www.dol.gov/owcp/energy/>

⁵⁸ <https://ehss.energy.gov/Search/Facility/ViewByName.aspx>

The characterization of the site as an atomic weapons employer from 1966 to 1973 by the EEOICP and DOE's Office of Environment, Health, Safety, and Security is consistent with the historical records that document the weapons complex activities conducted by NFS at West Valley during this time.

D. Disposal of N-Reactor Wastes

As described above, the N-Reactor at Hanford was used both for nuclear weapons plutonium production and for the generation of electricity. At Hanford, the K-Basin sludge (which consists largely of deteriorating N-Reactor fuel that was stored in the K-Basin after it was removed from the N-Reactor⁵⁹), has been recovered, containerized, and is being stored prior to final repackaging for disposal at the Waste Isolation Pilot Plant (WIPP)⁶⁰. The disposition of this material at WIPP suggests that DOE has determined that the N-Reactor sludges are defense waste, even though the N-Reactor was used for commercial power generation as well as weapons plutonium production. At West Valley, TRU wastes were also generated through defense and non-defense activities, but unlike the N-Reactor, DOE is labeling the West Valley waste as "commercial" rather than "defense" waste, effectively stranding the TRU at West Valley for the foreseeable future.

VI. DOE's GTCC EIS Does Not Provide a Viable Near-Term Disposal Path for West Valley TRU

Since the beginning of the West Valley Demonstration Project in 1982, DOE has generated approximately 34,000 cubic feet of TRU at West Valley. This waste must be stored on site

⁵⁹ <https://www.hanford.gov/page.cfm/K-Basins>

⁶⁰ <https://www.hanford.gov/page.cfm/STP>

because DOE's "commercial" designation of this waste makes it ineligible for disposal at WIPP.⁶¹ This creates a roadblock to the completion of the WVDP,⁶² and means that scarce EM cleanup funds have to be expended for long-term TRU storage at West Valley.

In an effort to resolve the West Valley "orphan waste" TRU issue, DOE included the West Valley TRU in DOE's *Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Waste and GTCC-Like Waste* (DOE/EIS-0375)⁶³ (the West Valley TRU was evaluated in the GTCC EIS because DOE labeled it as "GTCC-like waste" for the purposes of the GTCC EIS⁶⁴).

The GTCC EIS evaluated several disposal alternatives, including disposal at WIPP, disposal at other DOE sites, and disposal at generic commercial facilities. The preferred alternative identified in the EIS for the disposal of GTCC and GTCC-like waste was "land disposal at generic commercial disposal facilities and/or disposal at the WIPP geologic repository."⁶⁵

In November 2017, DOE issued a report to Congress on GTCC disposal options and recommendations.^{66,67} Unlike the approach identified in the preferred alternative in the GTCC FEIS, DOE's report to Congress eliminated the possibility of disposing the West Valley TRU at WIPP, stating that, "[because] full waste emplacement operations at WIPP are not expected until

⁶¹ The WIPP Land Withdrawal Act limits the mission of WIPP to the disposal of wastes from atomic energy defense activities.

⁶² Section 2(a)(4) of the WVDP Act (Pub law 96-368) requires DOE to dispose of low-level waste and transuranic waste produced by the solidification of the high-level waste under the project.

⁶³ The GTCC Draft EIS was issued in February 2011, and the GTCC Final EIS was issued in February 2016.

⁶⁴ *Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Waste and GTCC-Like Waste* (DOE/EIS-0375)

⁶⁵ *Id.*

⁶⁶ The Energy Policy Act of 2005 requires that, prior to making a final decision on the disposal alternative or alternatives to be implemented regarding GTCC waste, the Secretary of Energy shall submit a report to Congress that describes the alternatives under consideration and await action by Congress.

⁶⁷ See *Alternatives for the Disposal of Greater-Than-Class C Low-Level Radioactive Waste and Greater-Than-Class C-Like Waste*, DOE Report to Congress, November 2017.

the 2021 timeframe, DOE is primarily considering disposal of the GTCC and GTCC-like waste at generic commercial facilities at this time.”⁶⁸ The report to Congress also states that DOE has “no preference on the land disposal methods” that would be used at the generic commercial site.⁶⁹ This means that DOE’s preferred option for disposing of the GTCC-like waste (i.e., the West Valley TRU) does not include the identification of 1) a specific disposal facility or 2) a disposal technology.

DOE has now completed the long-awaited GTCC FEIS and the required follow-up report to Congress. Unfortunately, the proposal for the disposal of GTCC-like waste identified by DOE is so general that it does not appear to identify an actionable path for disposal for the West Valley TRU. Consequently, NYSERDA continues to believe that the only viable approach for disposing of the West Valley TRU is for DOE to 1) correctly identify the West Valley waste as defense waste in accordance with the historic record for West Valley and the NWPA, and 2) dispose of the West Valley TRU at WIPP as allowed by the WIPP Land Withdrawal Act.

VIII. Conclusion

West Valley is the only EM-cleanup site in the nation where DOE asserts that a state is responsible for the entire cost of disposing DOE-generated HLW. West Valley is also the only site in the nation where TRU waste, generated by DOE through an EM cleanup project, is prohibited from disposal at DOE’s only operating, available TRU disposal facility because DOE has labeled the waste in a manner that is inconsistent with the NWPA. The issues discussed in this paper, which continue to come into focus as NYSERDA gathers additional information from the extensive historical record at West Valley, make it ever-clearer that the HLW and TRU at West Valley originated from “atomic energy defense activities.”

⁶⁸ *Id.*

⁶⁹ *Id.*

Over the last 36 years at West Valley, DOE and New York State have successfully overcome unique technical and legal challenges that could have delayed progress toward the safe and successful completion of the WVDP. It is time for DOE to recognize the extensive historical record of defense activities at the West Valley site and properly classify the West Valley waste as having come from “atomic energy defense activities.” DOE’s recognition of the defense origin of the West Valley wastes will add to the momentum of the WVDP cleanup progress by allowing the TRU to enter the queue for disposal at WIPP, and avoiding delays in the shipment of HLW when a repository or consolidated interim storage facility becomes available.

Exhibit B

to

NYSERDA's Comments in Response to
The United States Department of Energy's Request for Information (RFI)
regarding Consent-Based Siting and Federal Interim Storage

**PUBLICATION OF HARVARD NEGOTIATION AND
MEDIATION CLINICAL PROGRAM (HNMCP) REPORT,
“MOVING TOWARD A FRAMEWORK FOR CONTESTED
HEARINGS IN THE LICENSING OF ADVANCED REACTORS,”
PREPARED FOR THE NRC DECEMBER 2020 AND NRC
STAFF RESPOSE**

NRC Staff Response to HNMCP Report and Enclosed Report



**U.S. Nuclear Regulatory Commission
June 2021**

INTRODUCTION

The NRC staff retained the Harvard Negotiation and Mediation Clinical Program (HNMCP) for the semester of fall 2020 to evaluate ways in which the NRC could improve upon its existing contested hearing process for advanced reactors in a way that is more resource- and time-efficient than the existing process, consistent with principles of good regulation—"independence, openness, efficiency, clarity, and reliability"—and the NRC's dedication to "working effectively with all stakeholders, clearly communicating its requirements, and providing regulatory information and feedback in a timely manner" (see HNMCP Report at 5, enclosed).

A description of the report's five recommendations and the NRC staff's next steps planned in response to each recommendation are provided below.

NRC STAFF RESPONSE TO HNMCP REPORT RECOMMENDATIONS

Recommendation 1. Focus on and strengthen the NRC's culture of independence, transparency, and neutrality toward intervenors and industry members through rigorous internal training and simplified public-facing resources.

a. Implement training to help NRC staff members more effectively navigate the complexities and challenges of their various roles in the organization.

b. Create and publicize user-friendly guides to demystify the process for contesting advanced reactor applications.

The NRC staff agrees with both parts (a) and (b) of Recommendation 1. The NRC staff believes that training opportunities for the NRC staff would benefit the NRC's efforts communicating and implementing the processes and procedures associated with contested hearings. The NRC staff also agrees that user-friendly guides, such as an infographic and associated explanation outlining details of the contested hearing process would help improve general understanding of the contested hearing process.

The NRC staff plans to develop these training and communication materials to implement Recommendation 1.

Recommendation 2. Institute a collaborative public engagement process to encourage early identification and resolution of issues.

a. Facilitate discussions between industry members, intervenors, and NRC staff to identify and resolve issues early.

b. Encourage joint fact-finding between industry members, intervenors, and the NRC.

The NRC currently has an [Alternative Dispute Resolution \(ADR\) policy statement](https://www.nrc.gov/about-nrc/alternative-dispute-resolution/nrc-programs.html) (57 Fed. Reg. 33,687 (Aug. 14, 1992)) and a voluntary process for ADR in its rules of procedure at 10 CFR § 2.338. Nevertheless, the NRC staff explored several options in connection with Recommendation 2a.

- Remind the public of the Commission's ADR policy statement and the availability of existing tools by updating and clarifying the NRC's public website (e.g., <https://www.nrc.gov/about-nrc/alternative-dispute-resolution/nrc-programs.html>).
- Propose an update to the ADR policy statement to reflect experience gained and lessons learned since its issuance in 1992.
- Propose a periodic meetings process via Commission order directing presiding officers to include a requirement in their scheduling orders for contested licensing proceedings that the parties

regularly meet (after a hearing is granted) and submit joint letters or motions to the licensing board reporting on the results of their meetings.

- Propose a Commission-established pilot program for a prehearing request ADR opportunity modeled on the NRC's "early" or pre-investigation ADR program for discrimination. Information about this program is available at <https://www.nrc.gov/about-nrc/regulatory/enforcement/adr/pre-investigation.html>
- Propose a Commission-established pilot or rulemaking for the use of the ADR process to resolve National Environmental Policy Act compliance contentions instead of the 10 CFR part 2 adjudicatory process.

After exploring these options and considering the availability of resources, the NRC staff decided that the best option is to remind the public of the Commission's ADR policy statement and the availability of existing tools by updating and clarifying the NRC's public website. The NRC staff may consider other options in the future, depending upon the availability of resources, and may seek additional input from the public at that time.

The NRC staff does not plan further action on Recommendation 2b. The NRC's existing processes provide flexibility for the parties to engage in discussions to identify and resolve issues early. For example, the parties may voluntarily pursue joint fact-finding; however, there may be limits to the NRC staff's ability to participate in such efforts.

Recommendation 3. Move the deadline for filing contentions until after the NRC staff have finished the Safety Evaluation Report and the Environmental Impact Statement.

Implementation of this recommendation would require rulemaking. Because the NRC is not considering rulemaking to amend 10 CFR part 2 at this time, the NRC does not plan any action in response to this recommendation. The NRC has considered the timing of contention submissions in the past. A discussion of the NRC's historical consideration of this issue is available in Background Material on NRC Adjudications for the January 31, 2013 Commission Meeting on Public Participating in NRC Regulatory Decision-Making, Enclosure 1: The History of Nuclear Regulatory Commission Standing and Contention Admissibility Standards Promoting Effective and Efficient Public Participation (ADAMS Accession No. [ML13009A258](#)).

Recommendation 4. Continue to require that contested hearings be conducted in-person, on a live record, whenever practicable.

The NRC staff agrees; the existing rules of practice in 10 CFR Part 2 accommodate this practice.

Recommendation 5. Institute or enforce NRC deadlines for issuing decisions in contested hearings.

This is not something the NRC staff can readily pursue. Deadlines have been identified in the model milestones in 10 CFR part 2, appendix B, and presiding officers establish deadlines in case-specific scheduling orders. The NRC staff does not plan any action in response to this recommendation.



MOVING TOWARD A FRAMEWORK FOR CONTESTED HEARINGS IN THE LICENSING OF ADVANCED REACTORS

PREPARED FOR THE U.S. NUCLEAR REGULATORY COMMISSION

FENELLA MCLUSKIE & JOSHUA JOSEPH FREUNDEL
HARVARD NEGOTIATION AND MEDIATION CLINICAL PROGRAM

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MOVING TOWARD A FRAMEWORK FOR CONTESTED HEARINGS IN THE LICENSING OF ADVANCED REACTORS

EXECUTIVE SUMMARY

Introduction

On January 14, 2019, Congress passed the Nuclear Energy Innovation and Modernization Act¹ (NEIMA). NEIMA codified efforts already underway at the U.S. Nuclear Regulatory Commission (NRC) to develop a new regulatory framework for licensing advanced reactors, a rulemaking effort commonly referred to as “Part 53”. The NRC retained the Harvard Negotiation and Mediation Clinical Program (HN MCP) to develop recommendations to improve the efficiency of the contested hearing process for advanced reactor license applications. This Report presents those recommendations, along with our findings and useful context.

Goals

Our recommendations aim to suggest ways in which the NRC could develop a contested hearing process for advanced reactors that is more resource- and time-efficient than the existing process, consistent with principles of good regulation—“independence, openness, efficiency, clarity, and reliability”²—and the NRC’s dedication to “working effectively with all stakeholders, clearly communicating its requirements, and providing regulatory information and feedback in a timely manner.”³ Broadly, our recommendations seek to:

- Simplify the contested hearing process to reduce confusion and costs;
- Increase early public participation in a collaborative process to focus intervenors, applicants, and NRC staff on contentious issues, resolve issues where possible, and reduce litigation; and
- Restore confidence and trust in the contested hearing process and in the NRC.

Challenges

We quickly learned that licensing nuclear reactors is complex, technical, and in some segments of the public, highly controversial. Designing a process that effectively incorporates meaningful public participation⁴ presents a number of challenges:

- **Multiple stakeholders.** For any given application, the contested hearing process involves the NRC, the applicant, the community that will host the reactor, intervenors, and the public at large—all with different interests.
- **Immense power differentials.** Industry members are frequently better funded and better represented in politics and in the application process than intervenor groups, creating a power imbalance and mistrust.

¹ Pub. L. No. 115-439 (2019).

² U.S. NUCLEAR REGULATORY COMMISSION, NRC VISION AND STRATEGY: SAFELY ACHIEVING EFFECTIVE AND EFFICIENT NON-LIGHT WATER REACTOR MISSION READINESS 1 (Dec. 2016).

³ *Id.* at 1–2.

⁴ Throughout this report we use the term “meaningful” to describe participation that has a reasonable chance of affecting the outcome of a process.

- **Technical complexity.** The highly technical nature of nuclear reactors makes it difficult for laypeople to understand, and therefore to articulate challenges that will benefit the NRC's review of the technology being licensed.
- **Scientific uncertainty.** Advanced reactors use new technology that has not been implemented in practice, meaning that even experts may not yet fully appreciate where the biggest risks lie.
- **Strong opposing viewpoints.** Stakeholders in this process have fundamentally different values that seem difficult to reconcile: applicants seek licenses to operate nuclear power plants, while a vocal subset of intervenor groups seeks to prevent the licensing of any such plants.
- **A government entity that answers to different stakeholder groups.** As a federal agency, the NRC is subject to congressional oversight and political pressure, but the NRC's purpose is to serve the public, including applicants, communities, and intervenors—and the interests of these groups frequently pull in opposite directions.

Stakeholders

There are three major groups of stakeholders involved in the contested hearing process: the NRC, applicants, and intervenors.

The NRC. NRC technical staff play a fundamental role in the process, as it is the staff who review the application and respond to contentions and bring their technical expertise to bear in forming an opinion on whether the application is sufficient to make the necessary findings for licensing under the AEA. NRC attorneys represent and advise NRC staff in the discharge of their responsibilities in the application and contested hearing process. ASLBP judges and Commissioners decide contested hearings and appeals.

Applicants. We identified two major types of applicants: well-established industry players, with experience applying for large LWR licenses, and newer, smaller players aiming to leverage new, innovative technologies to build and operate advanced reactors.

Intervenors. These are members of the public who file contentions on the application, ranging from state attorney general offices, to environmental non-profits and other citizens' advocacy groups and private citizens. There is wide variance in the sophistication, technical knowledge, and resources of intervenors.

Key Findings

Finding 1. The NRC has a wealth of technical expertise and institutional knowledge and dedicated public servants that are instrumental in enabling the NRC to perform its mission.

Finding 2. Meaningful public participation is viewed by nearly all stakeholders as essential to the reactor licensing process, but stakeholders disagree over the extent of the role the public should play.

- a. Meaningfully public engagement is a key part of the NRC's mission and is embraced by the NRC staff.

- b. Industry members support public participation but want to limit the public's role in the advanced reactor licensing process.
- c. Intervenors want more opportunities for meaningful public participation in the advanced reactor hearing process.

Finding 3. There are high levels of distrust between stakeholder groups.

- a. Intervenors distrust the NRC.
- b. Intervenors distrust advanced reactor technology.
- c. Industry members, and some NRC staff, do not trust intervenors to participate in the contested hearing process in good faith.

Finding 4. There is broad support among stakeholder groups for a simpler, more time- and cost-efficient contested hearing process for advanced reactors.

Finding 5. There is a widely shared desire for more clarity around the procedural rules governing the application and contention process.

Recommendations

Recommendation 1. Focus on and strengthen the NRC's culture of independence, transparency, and neutrality toward intervenors and industry members through rigorous internal training and simplified public-facing resources.

- a. Implement trainings to help NRC staff members more effectively navigate the complexities and challenges of their various roles in the organization.
- b. Create and publicize user-friendly guides to demystify the process for contesting advanced reactor applications.

Recommendation 2. Institute a collaborative public engagement process to encourage early identification and resolution of issues.

- a. Facilitate discussions between industry members, intervenors, and NRC staff to identify and resolve issues early.
- b. Encourage joint fact-finding between industry members, intervenors, and the NRC.

Recommendation 3. Move the deadline for filing contentions until after the NRC staff have finished the Safety Evaluation Report and the Environmental Impact Statement.

Recommendation 4. Continue to require that contested hearings be conducted in-person, on a live record, whenever practicable.

Recommendation 5. Institute or enforce NRC deadlines for issuing decisions in contested hearings.

Limitations of this Report

This Report is a preliminary conversation in the larger project of developing a contested hearing process for advanced reactor licensing. Our comments reflect the early stage at which the Part

53 process stands at the time of writing. While we have endeavored to be responsive to the interests we heard directly from stakeholder groups, we cannot make claims as to their universal truth. We also note that time constraints led us to offer somewhat generalized recommendations that we hope can serve as a framework for further refinement in the continued progression of the Part 53 rulemaking process set to run through 2024.

GLOSSARY OF TERMS AND ABBREVIATIONS

ADR: Alternative dispute resolution. Refers to a any procedure that is used to resolve issues in controversy, including, but not limited to, conciliation, facilitation, mediation, or arbitration.⁵

AEA: The Atomic Energy Act of 1954.

APA: The Administrative Procedure Act of 1946.

Applicant: An organization that has filed an application with the NRC for licensing the construction and/or operation of a nuclear reactor.

ASLBP: Atomic Safety and Licensing Board Panel.

CFR: Code of Federal Regulations.

COL: A combined construction permit and operating license, granted to Applicants in line with Part 52.

DSD: Dispute system design. Refers to the principles and practices involved in creating processes for preventing, managing, and resolving conflict.⁶

EIS: Environmental Impact Statement. The document prepared by NRC staff to evaluate the environmental impact of a proposed nuclear site. Serves as the legal environmental documents the NRC staff's environmental review.

ER: Environmental Report. The document prepared by an Applicant in support of its application, containing its assessment of the environmental impact of a proposed nuclear reactor.

Federal Register: A daily publication of the US federal government that issues proposed and final administrative rulemakings of federal agencies.

HNMCPC: The Harvard Negotiation and Mediation Clinical Program.

Industry: The category of external stakeholders that support the licensing of nuclear reactors, including industry representative groups, vendors, developers, and plant operators.

Intervenors: An individual or group that has filed a successful petition to intervene in and raise challenges to a licensing application with the NRC. In this Report, the term is used generally to denote the category of external stakeholders that includes environmental attorneys and nonprofits, civic organizations, anti-nuclear groups, and state attorney general offices.

⁵ 5 U.S.C. § 571.

⁶ LISA BLOMGREN AMSLER, JANET K. MARTINEZ & STEPHANIE E. SMITH, DISPUTE SYSTEM DESIGN: PREVENTING, MANAGING, AND RESOLVING CONFLICT 7 (2020).

LWR: Large light-water reactor. Refers broadly to those nuclear plants composing the current U.S. fleet, and whose operating technology is contemplated by the current licensing framework.

NEIMA: The Nuclear Energy Innovation and Modernization Act of 2019.

NEPA: The National Environmental Policy Act of 1969.

NRC: The Nuclear Regulatory Commission. Also referred to in this Report as the “Agency”.

OGC: The Office of the General Counsel, an office within the NRC.

Part [x]: Any chapter under Title 10 of the Code of Federal Regulations that sets forth the agency rules promulgated by the NRC in accordance with the APA. For example, when we refer to “Part 2”, we mean 10 CFR Part 2.

SAR: Safety Analysis Report. The document prepared by an applicant and submitted with its application, that details the safeguards and controls to be implemented in a proposed nuclear site.

SER: Safety Evaluation Report. The document prepared by the NRC to evaluate the safety claims presented in an SAR.

INTRODUCTION

About HNMCP

Founded in 2006, HNMCP is “an academic program at Harvard Law School focusing on cutting edge work in dispute systems design, negotiation, mediation, facilitation, and conflict engagement.”⁷ Harvard Law School students take the clinical program for credit and typically engage in a one-semester-long project for a single client. Clients of the clinic have included U.S. and international private corporations, non-profit organizations, government agencies, and community groups.⁸

About the NRC

The NRC is an independent agency whose mission is to regulate civilian uses of nuclear technology, including the design, construction, and operation of nuclear reactors. The NRC was established under the Energy Reorganization Act of 1974,⁹ as a successor to the Atomic Energy Commission. It is headed by five Commissioners, appointed to five-year terms by the President and confirmed by the Senate.¹⁰ The AEA¹¹ governs most of the NRC’s activities and the regulations produced by the NRC is published in Title 10 of the CFR.

Acknowledgments

The authors wish to thank HNMCP and the NRC for the opportunity to research and prepare this Report. We also extend our gratitude to the many individuals who gave freely of their time, patience, and insight to help this Report come together. Special thanks are owed to Maxine Keefe, our point of contact and overall coordinator in the NRC’s Office of General Counsel, as well as Nanette Valliere, NRC technical staff member and our nuclear guru, both of whom went above and beyond to provide us with essential context and support in our work. Last, we give our deepest appreciation to our clinical instructor, Neil McGaraghan, for his invaluable guidance and steadfast dedication to helping us conceptualize what is written here.

⁷ HARVARD NEGOTIATION AND MEDIATION CLINICAL PROGRAM, <http://hnmcp.law.harvard.edu/> (last visited Dec. 7, 2020).

⁸ *See id.*

⁹ Pub. L. No. 93-438 (1974).

¹⁰ 42 U.S.C. § 5841.

¹¹ Pub. L. No. 83-703 (1954).

PROJECT BACKGROUND AND CONTEXT

Purpose and scope of project

On May 23, 2018, the NRC staff submitted a paper to the Commission about the licensing of advanced non-LWRs.¹² This staff paper recommended the development of a new rule for reviewing the design and operation of advanced reactors. Specifically, it called for an “optional, technology-inclusive, risk-informed, performance-based rule for reviewing the design and operation of advanced reactors.”¹³ While the NRC staff proposed that the rulemaking initially be “limited to the design and operating criteria for licensing a non-LWR,” the NRC staff stated that it “would consider whether it should include alternate licensing process[es] based on lessons learned from applying 10 CFR Part 52.”¹⁴

This new rulemaking initiative became statutorily required in early 2019, when Congress passed NEIMA. The goal of the new rulemaking is to allow for the diversity of advanced technologies to be consolidated under a single licensing framework, one that is designed to maximize the efficiency of the process. Specifically, it directs the NRC to “establish a technology-inclusive regulatory framework” that encourages greater technological innovation.¹⁵

While the rulemaking process is still in its early stages, the NRC plans to complete Part 53 by 2024, three years ahead of the statutory deadline.¹⁶

In Summer 2020, the NRC engaged HNMCP to “generat[e] ideas for how this new hearing process may be structured and tailored to efficiently meet the needs of the public, advanced reactor applicants, and other stakeholders.”¹⁷ The NRC asked for a “description of options for revision of/addition to such hearing processes, including the pros and cons of each option.”¹⁸

¹² U.S. NUCLEAR REGULATORY COMMISSION, ACHIEVING MODERN RISK-INFORMED REGULATION, SECY-18-0060, at 10 (May 23, 2018) (withdrawn by SRM-SECY-18-0060),

<https://www.nrc.gov/docs/ML1811/ML18110A403.pdf> [hereinafter ACHIEVING MODERN RISK-INFORMED REGULATION]; see also Maxine Segarnick & Sachin Desai, *Preparing for Advanced Reactors: Exploring Regulatory and Licensing Reform*, AM. BAR ASS’N (Nov. 14, 2018).

¹³ ACHIEVING MODERN RISK-INFORMED REGULATION, Enclosure 5, at 10.

¹⁴ *Id.*

¹⁵ Nuclear Energy Innovation and Modernization Act (NEIMA) of 2018, Pub. L. No. 115-439, § 103(a) (2019).

¹⁶ Memorandum from Annette L. Vietti-Cook, Secretary to Margaret M. Doane Executive Director for Operations (Oct. 2, 2020) (SRM-SECY-20-0032),

<https://www.nrc.gov/docs/ML2027/ML20276A293.pdf>; see also Morgan Lewis, *NRC Commissioners Accelerate Schedule for New Part 53 for Advanced Reactors*, UP & ATOM BLOG (October 7, 2020), <https://www.morganlewis.com/blogs/upandatom/2020/10/nrc-commissioners-accelerate-schedule-for-new-part-53-for-advanced-reactors>.

¹⁷ HNMCP PROJECT PLAN: U.S. NUCLEAR REGULATORY COMMISSION 2 (2020).

¹⁸ *Id.* at 4.

Based on the initial project description and our conversations with NRC staff and attorneys, we designed our inquiry and this report to address the following question:

What are some ways in which the contested hearing process for advanced reactors might be structured to maximize efficiencies of time, cost, and human resources, in service of the NRC's mission to ensure the safe use of radioactive materials for beneficial civilian purposes while protecting people and the environment?

Framework within which NRC operates

The NRC licenses the construction and operation of nuclear power plants in the United States. In its organic statute, the NRC is tasked with establishing the requirements for licensing nuclear facilities, and for monitoring and enforcing operational compliance. Under this mandate, the NRC currently licenses ninety-four electricity-generating nuclear power reactors.¹⁹ In 2020, the agency has a full-time staff of roughly 3,600 people and a budget of \$921.1 million.²⁰ Until recently, 90% of its budget was recovered through fees collected from licensees and license applicants, and returned to the U.S. Treasury,²¹ though NEMA amended the fee recovery structure.

The NRC was created after its predecessor, the Atomic Energy Commission, was criticized for simultaneously promoting and regulate nuclear energy – a “fox guarding the hen-house” dilemma. The Energy Reorganization Act of 1974 established the NRC as an independent agency with the goal to regulate, and not to promote, nuclear energy.²² In support of its role as a neutral regulator, the NRC has established internal guidance for staff to abide by principles of good regulation, including that they be objective and unbiased in their assessment of license applications and contentions alike.²³

The NRC holds a hearing on every application for a construction permit or combined license for a nuclear power reactor (known as “mandatory hearings”). The AEA also requires that an opportunity to request a hearing be made available to any person whose interest may be

¹⁹ *Operating Reactors*, U.S. NRC, <https://www.nrc.gov/reactors/operating.html>.

²⁰ *Congressional Budget Justification: Fiscal Year 2020 (NUREG-1100, Volume 35)*, U.S. NRC, <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1100/v35/>.

²¹ *General Questions about NRC Fees*, U.S. NRC, <https://www.nrc.gov/about-nrc/regulatory/licensing/general-fee-questions.pdf>.

²² J. SAMUEL WALKER & THOMAS R. WELLOCK, *A SHORT HISTORY OF NUCLEAR REGULATION, 1946–2009*, at 48–49 (Oct. 2010), <https://www.nrc.gov/docs/ML1029/ML102980443.pdf>.

²³ *Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition (NUREG-0800, Formerly issued as NUREG-75/087)*, U.S. NRC (last updated July 13, 2020), <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0800/index.html>; see also *Values*, U.S. NRC, <https://www.nrc.gov/about-nrc/employment/ethics/major-ethics-rules/impartiality.html> (last updated Oct. 9, 2014). NRC employees, like all federal employees, also swear an oath in accordance with 5 U.S.C. § 3331 to uphold the Constitution and faithfully execute the duties of their office.

affected by the proceeding for any license or construction permit (a “contested hearing”).²⁴ These hearings are typically held before the Commission or the ASLBP.²⁵ The NRC has broad discretion to determine the form these hearings will take, and the various requirements related to them.²⁶ This broad latitude has been confirmed by the U.S. Court of Appeals for the D.C. Circuit.²⁷

The NRC’s statutory mandate is to grant licenses to those applicants who meet the regulatory requirements for operating nuclear facilities.²⁸ Congress has instructed the NRC, most recently under NEIMA, to report on options to conduct the application process, within the existing regulatory framework, as efficiently and speedily as is reasonably possible, consistent with the NRC’s mission.²⁹

Current process for contested hearings on licensing LWRs

Currently, applicants for a license to construct and operate a nuclear power plant must follow the NRC rules of practice and procedure outlined in 10 CFR Part 2. These rules specify the procedure for filing and docketing applications, as well as the procedural rules for a contested hearing. While this Report does not directly address the current process, it is outlined here for two reasons. First, despite the broad scope granted us to consider a new contested hearing framework, we used the current process as a point of departure for thinking about how to meet the NRC’s goals of improving efficiency and reducing costs. Second, a number of our findings and recommendations have implications for the current hearing process as well. Therefore, we begin with an outline of the current process, both for license applications overall and for the life of a contention specifically.³⁰

A license application for a new nuclear power plant includes two reports, which correspond to two major areas of regulatory oversight: A Safety Analysis Report (SAR) and an Environmental Report (ER). These reports are typically developed following pre-application interactions with members of the NRC’s technical staff. When an applicant has completed the application, it submits these reports and the other portions of the application. The technical staff then conducts an acceptance review to determine whether the application is complete. Upon finding that an application is complete, the NRC staff docket a tendered application. In connection with this event (though occasionally some time later), the NRC will publish a notice in

²⁴ *Types of Hearings*, U.S. NRC, <https://www.nrc.gov/about-nrc/regulatory/adjudicatory/types-of-hearings.html> (last updated January 19, 2018).

²⁵ These are not “on-the-record” hearings. See 5 U.S.C. § 554.

²⁶ Because these are informal hearings, they are not subject to the specific provisions detailed in the APA for formal, “on-the-record” hearings.

²⁷ See *Union of Concerned Scientists v. U.S. Nuclear Regulatory Commission*, 920 F.2d 50 (D.C. Cir. 1990).

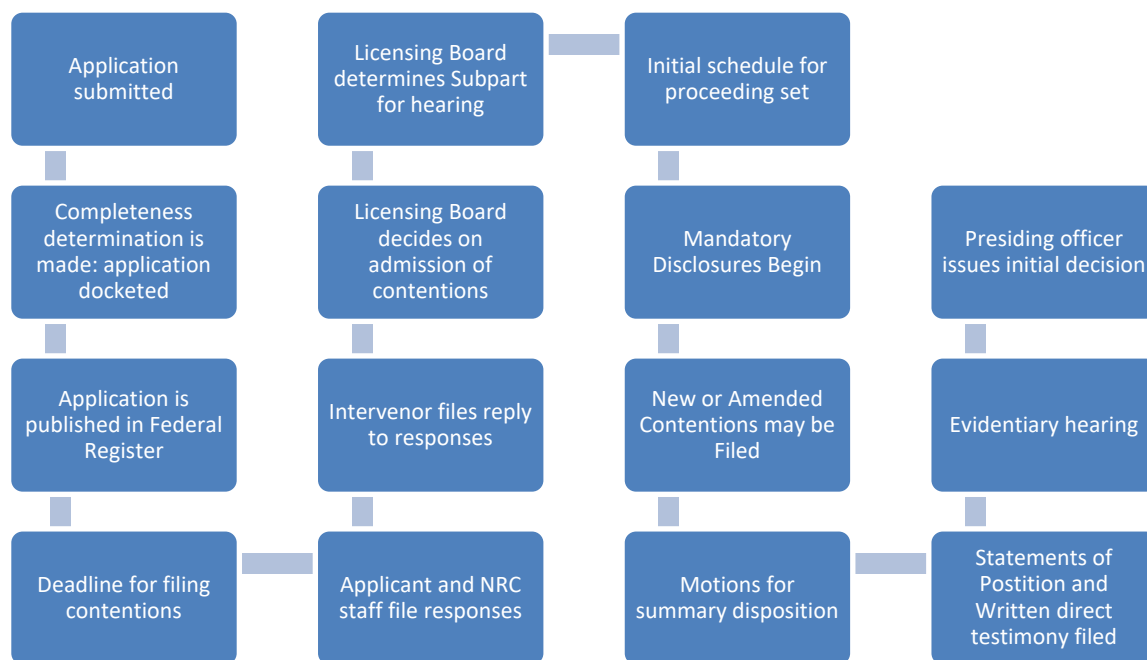
²⁸ See AEA §§ 103, 185.

²⁹ NEIMA, *supra* note 15 at § 103(b)(4)(C).

³⁰ While there are some differences between applications prepared under Part 50 and those prepared under Part 52 of 10 CFR, these differences are not material to a summary of the Part 2 process. For the sake of this summary, we will assume the applicant seeks a COL under Part 52.

the Federal Register advising the public that the application has been docketed and providing the public with an opportunity to file a petition to intervene and challenge the application.³¹ Members of the public may file intervention petitions that include demonstrations of standing for individual or organizational petitioners, as well as one or more contentions that describe the specific matters the petitioners wish to challenge.³² The contested hearing process is laid out in the figure that follows.

Figure 1: Contested Hearing Process Under Subpart L of 10 CFR Part 2



Most contentions will challenge either information concerning the safety features presented in the SAR or information regarding environmental impacts presented in the ER.

Past reforms of the contested hearing process

The public's opportunity to contest elements of a license application through a "trial-like" process dates back to the existence of the AEC.³³ However, the contested hearing process has changed over the years, through guidance from the NRC and, more extensively, through the rulemaking process. Major regulatory overhauls to the contested hearing process were implemented in 1989, 2004, and 2012.

In 1989, the NRC raised the pleading standard to roughly the level it remains at today. Under the current standard, intervenors must provide "a specific statement of the issue of law or fact to be raised or controverted" in addition to a host of supporting documentation.³⁴ This reform of the

³¹ See 10 CFR 50.43.

³² See 10 CFR 2.309.

³³ AEA § 189.

³⁴ 10 C.F.R. § 2.309(f); see 54 Fed. Reg. 33180 (August 11, 1989).

process coincided with the adoption of Part 52; both were done with an eye to reducing the amount of redundant litigation.³⁵

The next major reform effort came in 2004. Among other changes, this rulemaking moved the format of standard contested hearings away from that familiar in U.S. courts, by replacing discovery with the current NRC practice of “mandatory disclosures”³⁶ and providing that, in the hearing, only the presiding officer can cross-examination witnesses.³⁷ This rule also expanded the application of the heightened pleading standard, and instituted certain structural changes to further streamline the hearing process.³⁸

The most recent significant changes came in 2012, when the NRC corrected some errors from the 2004 rulemaking and made other changes to further “promote fairness, efficiency, and openness in NRC adjudicatory proceedings.”³⁹ Of note, the NRC clarified and streamlined the standards for filing contentions after the expiration of the initial filing deadline.⁴⁰

While we understand that Part 53 and possible changes to Part 2 for contested hearings for advanced reactor are not expected to apply to large LWRs, these past reforms to the existing contested hearing process offer context to consider how a new contested hearing process for advanced reactors might depart from the current process.

³⁵ See Steven G. Burns, *Reformed and Reforming: Adapting the Licensing Process to Meet New Challenges*, 9 Nuclear Law Bulletin 7, 11 (2017).

³⁶ 69 Fed. Reg. 2188 (January 14, 2004).

³⁷ *Id.* at 2187.

³⁸ *Id.* at 2188.

³⁹ 77 Fed. Reg. 46562 (August 3, 2012).

⁴⁰ *Id.* at 46570–72

RESEARCH METHODOLOGY

To collect information on the current contested hearing process and evaluate how the process might be altered for advanced reactors, we spoke with individuals who had experience with the current process, and did extensive research on designing optimal conflict resolution processes. We relied on several methods: interviews of current stakeholders and outside experts; direct observation of public meetings; consultation with technical and regulatory staff at the NRC; review of primary documents about the technical and regulatory aspects of the NRC's work; and reference to case studies and secondary literature on best practices in dispute systems design (DSD).

Interviews and observations

We observed public meetings led by NRC staff and the private planning meetings that preceded such meetings. While we were unable to observe a contested hearing, as none occurred during our project, what we did observe gave us some insight into the context in which the NRC staff and the public presently engage, which contributed to our ultimate findings.

We attended two public meetings organized and run by staff from the Offices of Nuclear Material Safety and Safeguards (NMSS) and Nuclear Reactor Regulation (NRR), in which the staff presented certain proposals for a new Part 53 licensing framework and solicited public feedback. In addition, select stakeholders on both the industry and intervenor sides were invited to give presentations. For example, Marc Nichol of the Nuclear Energy Institute and Ed Lyman of the Union of Concerned Scientists presented at the meeting held on September 22, 2020.

We interviewed various stakeholders to understand how the contested hearing process could be improved for advanced reactors. These interviews were designed around two specific goals: information gathering and idea generation.

The NRC provided us with a list of possible organizations and individuals to contact. We spoke with many individuals from this list, and others not on the list who were recommended to us by interviewees. We say a bit more about each type of stakeholder below.

Over the course of the project, we conducted interviews with several categories of individuals. These categories are laid out in the following table.

Table 1: Types of Interviewees			#
Category A: Internal Stakeholders		NRC Staff	5
		NRC Attorneys	3
		Licensing Board and Commission Personnel	4
Category B: External Stakeholders	Industry	Established Industry Members	2
		New Industry Members	2
		Industry Representatives	3
	Intervenors	Citizen groups/laypeople	3
		State AG Offices	1
		Environmental Attorneys	3
Category C: Outside Experts		Former Commissioners	3
		Dispute Systems Design Practitioners	3

Internal

NRC Technical Staff

We interviewed five technical staff from the NRC to better understand how nuclear reactors work, how the contested hearing process works, and the role of the NRC in reviewing applications and responding to contentions and public comment.

NRC Attorneys

We spoke with three NRC attorneys, who represent and advise NRC staff in the discharge of their responsibilities in the application and contested hearing process. We looked to these interviewees to gain insight about the NRC's mission, the purpose and role of the contested hearing process within this mission, and the challenges faced by their clients (i.e., the technical staff). Several also had in-depth knowledge of the previous revisions to the contested hearing process, how they had come about, and to what effect.

Licensing Board and Commission Personnel

We spoke with one representative of the licensing board and four members of the Commissioners' offices. As the parties making the contested hearing decisions, it was important we speak with these individuals, to see how they approached the process.

External

Intervenors

We interviewed seven intervenors from six different groups, including environmental attorneys, citizens' groups, and current and former attorneys from two state attorney general's offices. Intervenors were key stakeholders to interview since the purpose of the contested hearing process is to allow the public to have input in the licensing process. Intervenors vary in sophistication, and we tried to get a full range of intervenor groups. We spoke with a representative of state government, one of the best-funded types of intervenors. At the other end of the spectrum, we spoke with two individuals from a citizen group, and one other layperson, who have no scientific or legal expertise, and who rely on donations for their funding.

It is important to note that the views of these intervenors do not represent the view of the public as a whole. Everyone we interviewed had some experience opposing the licensing of a nuclear power plant, or another proceeding involving a nuclear power plant, and so our interviewees do not form a representative cross-section of the public as a whole. Rather, they represent views of a subset of the public that has actually interacted with the licensing process.

Applicants

We interviewed seven members of industry from three different companies or groups: one established industry member, one new industry member, and one industry representative group. This group ensured that we had access to people (i) with extensive experience in the nuclear industry, (ii) with direct experience with contested hearings for large LWRs, and (iii) from newer companies that were new to nuclear. Some of our interviewees had experience with advanced reactors and some did not.

Other

Former Commissioners

At the suggestion of the NRC, we spoke with three former NRC commissioners, who provided us with much of the context that situates this Report. In particular, each former commissioner had a wealth of knowledge on the development of the current hearing process, past attempts to revise the hearing process and what obstacles those attempts encountered. They also provided feedback on some of our preliminary recommendations, thus serving in some capacity the dual goals of information gathering and idea generation.

DSD experts

Finally, we interviewed three experts with consulting practices centered around complex dispute systems design in the energy and environmental space. These interviews focused primarily on the goal of idea generation, as we presented many of our preliminary findings and relied on these individuals' broad experience to help concretize and clarify the recommendations that are detailed in this report. Their feedback is used extensively, and some of their publications are included in the bibliography that concludes this Report.

Nuclear and regulatory research

At its heart, the NRC's work is about regulating a specific technology and its various (peaceful) uses. Much of our background work involved understanding the technologies that underlie the safe and effective operation of nuclear reactors, and, in particular, the ways that these technical aspects are evaluated during the licensing process. As neither of us possess this sort of technical expertise, we undertook a crash course in order to gain a technical understanding sufficient for us to provide our best work. This was especially important in light of the directive that the new licensing requirements for advanced reactors be "technology inclusive" (or "technology neutral") and "performance-based." We met extensively with NRC technical staff to understand nuclear reactor technology and how the NRC evaluates the technology. We consulted written materials that were recommended to us by the staff and that we found in our own research.

We also undertook to gain a working knowledge of the regulatory structure that guides the NRC, delimited by the current rules, notably those in Title 10 Part 2 of the Code of Federal Regulations (CFR), and by the various statutes that set the NRC's authority. We consulted agency and legislative materials, including 10 CFR Parts 2, 50, and 52, the AEA, and various volumes of the Federal Register. Many of these documents, as well as secondary sources detailing the regulatory framework, the licensing process, and the functions of rulemaking, were graciously provided to us by staff members at the NRC.

We have endeavored to limit our report to recommendations that could be implemented under existing law (i.e., without the need for Congressional action). And so, for example, while several stakeholders urged that the NRC consider establishing a source of funding to ease the burden on intervenors, this is barred by current law and thus we did not pursue the idea here.⁴¹

Dispute systems design theory

Our recommendations are grounded in principles of DSD theory, which we found by reviewing the DSD literature and consulting with experts in the field. Among the questions we sought to answer were:

- How do we create a more collaborative, participatory process among groups that see themselves as adversaries?

⁴¹ For more on this topic, see Appendix A.

- How do we create an efficient system in which different stakeholder groups are at odds with each other, perhaps intractably so?
- What might be the role of alternative dispute resolution (ADR) in an adversarial process?
- What processes can regulators implement to best earn and maintain the public's trust?
- How can the value of efficiency best be balanced with sometimes competing values of participation and accuracy?

To guide us towards solutions, we looked to past case studies, in which similar frameworks were proposed and implemented in closely related regulatory fields. In addition, we looked for support to articles and white papers produced by established experts in the field and tested their conclusions against the particular facts that this Project addresses. A list of these materials can be found in the bibliography. We also spoke with three practitioners of DSD whose work focuses on the area of energy regulation and plant siting issues: Catherine Morris⁴² and Stacie Smith⁴³ of the Consensus Building Institute, and Jonathan Raab⁴⁴ of Raab Associates. Their valuable feedback and observations informed our thinking and our recommendations.

⁴² See Catherine Morris, CBI, <https://www.cbi.org/about/bio/catherine-morris/> (last visited Dec. 7, 2020).

⁴³ See Stacie Nicole Smith, CBI, <https://www.cbi.org/about/bio/stacie-nicole-smith/> (last visited Dec. 7, 2020).

⁴⁴ See *Qualifications*, RAAB ASSOCIATES, LTD., <http://www.raabassociates.org/main/qualif.asp> (last visited Dec. 7, 2020).

INTERVIEW FINDINGS

The findings presented here are based on our notes of the oral interviews we conducted with various stakeholders and outside parties, along with follow-up exchanges in the form of email correspondence. We note that there were no recordings made of our oral interviews and any quotations included in this section are taken from our interview notes. We are confident that they accurately represent the essence of what the individual relayed to us, though they may not be precisely verbatim.

Finding 1. The NRC has a wealth of institutional knowledge and dedicated public servants that are instrumental in enabling the NRC to perform its mission.

Knowledgeable and dedicated public servants

It was clear from our interviews with NRC staff that they are exceptionally knowledgeable about nuclear technology, deeply committed to upholding the NRC's mission to protect public safety and the environment, and that they genuinely care about ensuring a fair hearing process. Several members of the NRC technical staff emphasized the amount of work that goes into reviewing applications and writing the final EIS and SER. Our conversations showed that the NRC staff take contentions very seriously and devote considerable time to understanding and addressing them. One interviewee mentioned that the NRC staff go the extra mile in reviewing the contested parts of an application, in no small part because of the importance of demonstrating that the NRC takes intervenors' concerns seriously. Several NRC staff also mentioned that they are happy to speak to industry members and intervenors alike about concerns, or to walk them through the process at a general level.

Difficult balance between neutrality and partiality

The NRC has safeguards in place to ensure that its various roles are kept separate. For instance, there are strict rules against ex parte communications⁴⁵ and strict rules preventing Commissioners from speaking about contested issues to staff who have worked on those issues.⁴⁶

Nonetheless, we understood from our interviews, especially with one NRC attorney, that the NRC staff have a difficult balance to strike: when reviewing the merits of applications and contentions, staff is supposed to be independent and neutral, yet in front of the ASLBP, staff presents its position on the contention. The staff position on the contention(s) may align with either the position of the applicant or the intervenor, or the staff may take an entirely different position.⁴⁷ For example, a staff position that an intervenor's contention should not be admitted renders the staff and the intervenors essentially "adversaries" in the hearing. Likewise, if the staff

⁴⁵ See 10 CFR § 2.347.

⁴⁶ See 10 CFR § 2.348.

⁴⁷ The applicant bears the burden of proof for safety issues, while, on the environmental side, the NRC staff bears the burden of showing compliance with NEPA.

position is that a contention has merit and the applicant opposes that determination, the NRC staff and the applicant are, in effect, “adversaries” on that issue in the hearing. Thus, the staff could find itself aligned with and opposed to an intervenor and the applicant in the very same hearing, depending on the contention(s) at issue. That said, the same obligations to be impartial and neutral federal employees applies in an adversarial setting.

One OGC attorney we interviewed explained that navigating the line between neutral, unbiased assessor of claims, and an advocate for the staff’s findings, is a challenge for the staff; counseling staff how to successfully navigate this complexity is a significant aspect of that OGC attorney’s role. As we understand it, by the time of the hearing the technical staff’s position is more often aligned with the applicant, because the staff’s concerns about the application have been resolved by that point in other venues (e.g., staff “requests for additional information” (RAIs) from applicant). Intervenors complain that this phenomenon—of the staff position on a contention aligning most often with the applicant position—creates the appearance of a persistent bias toward applicants. An OGC attorney suggested that the extent to which NRC staff and intervenors are adversaries in contested hearings may actually have an adverse impact on the staff’s ability to be unbiased at earlier stages in the contention process.

Transparency

The NRC has a robust repository of publicly available information. One intervenor who had an otherwise bleak view of the process highly praised the NRC for its public filing system and commended the staff members who work to make this information publicly available. As several NRC staff noted, the scope and accessibility of the NRC’s document repository is highly unusual among regulatory agencies.

In addition, the staff designate many of their public meetings as “Category 3”, meaning that “public participation is actively sought in the discussion of the regulatory issues.”⁴⁸

Candid self-reflections and desire for continual improvement

All the NRC staff we interviewed were also open and candid about shortcomings in the process, and open to entertaining suggestions for improving the process. Former Commissioners we spoke with also detailed the many times the NRC has engaged in self-reflection to improve its processes, and the many improvements and iterations that have led to the process as it stands today. This includes the previous overhauls of the contested hearing framework, outlined above.

ASLBP’s independence

Finally, we heard that the ASLBP successfully maintains its independence from the NRC staff. Some intervenors, who otherwise felt the NRC was pro-industry,⁴⁹ felt the Board was more neutral.

⁴⁸ Enhancing Public Participation in NRC Meetings, 67 Fed. Reg. 36920 (May 28, 2002); *see also* NUCLEAR REGULATORY COMMISSION, 10 CFR PART 53: “LICENSING AND REGULATION OF ADVANCED NUCLEAR REACTORS” (Sept. 22, 2020), <https://www.nrc.gov/docs/ML2025/ML20254A014.pdf>.

⁴⁹ See Finding 3.a.

Some industry members complained that the Board would sometimes rephrase an intervenor's contention if they felt it had merit but would otherwise fail the strict pleading standard. These industry members were frustrated by this practice, but we suspect it is this willingness to give intervenors (especially pro se intervenors) the benefit of the doubt that made intervenors view the ASLBP as more neutral than the NRC as a whole.

Finding 2. Meaningful public participation is viewed by nearly all stakeholders as essential to the reactor licensing process, but stakeholders disagree over the extent of the role the public should play.

a. Engaging meaningfully with the public is a key part of the NRC's mission and is embraced by NRC staff.

The ability to elicit public participation is a core element of the NRC's mission. As outlined under *The NRC Approach to Open Government*, the NRC "considers public involvement in, and information about, [the NRC's] activities to be a cornerstone of strong, fair regulation of the nuclear industry."⁵⁰

"It would be wrong to cut the public out of the process."

- NRC Staff Member

This point is also codified in several guiding statutes, including the APA.⁵¹ On the environmental side, a public comment period is required by NEPA, which, as implemented in Part 51, mandates that all draft or revised EISs "will be accompanied by or include a request for comments on the proposed action."⁵²

The AEA also mandates that public hearings be held: § 189(a) provides that in any proceeding under the Act, including the granting of a license or construction permit, "the Commission shall grant a hearing upon the request of any person whose interest may be affected by the proceeding, and shall admit any such person as a party to such proceeding."⁵³

"Lack of public confidence is not great for an agency."

- NRC Staff Member

The NRC's recognition of the importance of public participation is nowhere more clear than its Policy Statement on *Enhancing Public Participation in NRC Meetings*,⁵⁴ which aimed to "revis[e] the NRC's] public meeting policy to enhance public participation in NRC meetings. The policy statement recognizes the NRC's

⁵⁰ *Public Participation*, U.S. NRC, <https://www.nrc.gov/public-involve/open/public-participation.html> (last updated Aug. 15, 2017); see also 69 Fed. Reg. 2182 (Jan. 14, 2004).

⁵¹ See 5 U.S.C. § 552(a)(1).

⁵² 10 CFR § 51.73.

⁵³ AEA § 189(a).

⁵⁴ *Enhancing Public Participation at NRC Meetings*, 67 Fed. Reg. 36920 (May 28, 2002), <https://www.nrc.gov/reading-rm/doc-collections/commission/policy/67fr36920.html>.

“longstanding practice of providing the public with substantial information on its activities and of conducting business in an open manner”⁵⁵ and aims to further the NRC’s “strategic goal of increasing public confidence.”⁵⁶ Industry members support public participation but want to limit the public’s role in the advanced reactor licensing process

This was reflected in our interviews with NRC personnel, who noted that as an agency the NRC is accountable to the public and that transparency is a key value that the NRC seeks to uphold.

b. Industry members support public participation but want to limit the public’s role in the advanced reactor licensing process.

Support for public participation

Industry members support some level of public participation is valuable, mainly because it gives an opportunity for citizens to air concerns and add useful feedback that may not have been considered. A spokesperson for a new industry group expressed particular interest in engaging with the public. They described holding their own public meetings in order to educate the public on advanced nuclear technology and hear from individuals about their concerns and hesitations. They informed us that these meetings were well-attended by members of the public and they expressed their desire to communicate about their technology through other avenues. They seemed to genuinely believe that their technology poses almost no safety risks, and that any contrary view stems from a misunderstanding of the technology. They were therefore eager to meet with the public and with intervenors to explain how their technology works and to address concerns. It is not clear how open the industry will be to genuinely listening to intervenor’s safety and environmental concerns but, at a minimum, there is keen interest in engaging with the public.

Public engagement surpasses requirements

At the same time, several industry members also complained that they spend too much time and resources engaging with intervenors who seem more interested in subverting the licensing process than genuinely finding common ground. They contend that there is no need to allow contested hearings on

environmental issues, because the public comment period to review the environmental issues allows sufficient public participation. Along these lines, NEI has, in a white paper, suggested getting rid of “trial-type adjudicatory hearings” for environmental contentions, as they consider the hearing “duplicative” and unduly costly, in light of the opportunity for public comment.⁵⁷

“Public hearings exceed what is required by the AEA.”

- Industry Member

⁵⁵ *Id.* at 36921.

⁵⁶ *Id.*

⁵⁷ NUCLEAR ENERGY INSTITUTE, RECOMMENDATIONS FOR STREAMLINING ENVIRONMENTAL REVIEWS FOR ADVANCED REACTORS 1–2 (Mar. 2020), <https://www.nei.org/CorporateSite/media/filefolder/resources/reports-and-briefs/NEI-White-Paper-Recommendations-for-Streamlining-Environmental-Reviews-for-Advanced-Reactors.pdf> (“As part of the agency’s effort to streamline NEPA compliance, the NRC should eliminate this duplicative hearing opportunity, as it applies to environmental issues,

Industry members felt frustrated at this “two bites of the apple” approach – once through public comments, and again in the contested hearing – because they believe it exceeds statutory requirements.⁵⁸

ASLBP lenience

One industry member also expressed dissatisfaction that the Board sometimes helps intervenors by suggesting ways to rephrase their contentions so as to allow them in. They think that because the NRC has already completed its extremely thorough review, the contentions should be solely the responsibility of the petitioner and the NRC should not tip the scales in their favor.

“Policymakers should look at the effect of this kind of regulatory burden on the ability to deploy the safest technology that has been produced.”

- Industry member

Advanced reactors

Since industry members believe that advance reactors are safer than large LWRs, they contend that it is unnecessary to devote much time to contentions. They specifically highlighted for us the ways technology has improved, including through the development of passive safeguards and the existence of better reactor cores that overheat in days, rather than hours. Because

of this, industry members think that any contested hearing process should be even more streamlined in several ways, including removing in-person hearings and making it more difficult to have contentions admitted in the first instance.

c. Intervenor want more opportunities for meaningful public participation in the advanced reactor hearing process.

Intervenors believe that not only is public comment insufficient for the public to present concerns, but that the current contested hearing framework does not enable them to meaningfully participate in the licensing process or have a meaningful effect on the resolution of issues, and that this would become even more challenging for advanced reactors. They thought that public comment alone would not give a sufficient opportunity to have their concerns heard, because (i) it is more difficult to marshal evidence to back up their contentions on a cold record and (ii) without a live hearing run by neutral adjudicators, there is no incentive for the staff and applicant to take their concerns seriously. In addition, intervenors doubted whether they would have the ability to appeal comments that received unsatisfactory responses.

“When it comes to public comment, [the NRC] can listen but they don’t have to take us into consideration.”

- Intervenor

Dissatisfaction with the current process

given the various other vehicles for public participation on environmental issues already provided by NEPA and NRC regulations.” *Id.* at 2.).

⁵⁸ These industry members believed that a comment period would suffice as a “hearing” under AEA § 189(a).

Intervenors described a number of challenges regarding the mechanics of the current contested hearing process. They argue that having to file contentions before the NRC staff had completed their review is unduly burdensome because it requires them to commit time and money to raising issues that the staff would have found anyway in its review. Additionally, until the staff completes the EIS and SER, the applicant is making frequent revisions to the application to address the staff's concerns (e.g., those concerns raised in RAIs). The rules provide only thirty days for an intervenor to file a petition to intervene on a new issue or seek leave to amend its existing petition. This short timeframe is inherently challenging: intervenors must constantly monitor the docket for revisions to the application, they must read hundreds of pages of highly technical information, and they must hire an expert on very little notice to help them understand the changes being made. We heard from intervenors that hiring an expert in such a short time frame often drives up costs even more, because experts charge higher fees for such last-minute requests.

Indeed, funding, generally, was a major issue. One intervenor pointed to a subsidy for this kind of work provided by the State of California and wished that there was a similar option available originating from the NRC itself. Additionally, this type of sporadic, unpredictable, time-intensive work requires lawyers and experts to drop everything they are doing for other clients - a luxury many professionals do not have. One interviewee said she had to stop working on contentions in NRC proceedings because she could not fit them around her other work.

Challenges are exacerbated for advanced reactors

The challenges with eliciting meaningful public engagement are made starker by the introduction of new and varied technologies, as is the case with advanced reactors. One intervenor expressed a sense of hopelessness at being able to learn and understand these new technologies to a level that is sufficient for them to be able to file contentions. Intervenors also noted that it will be more difficult, and probably require more experience, for them to hire technical experts who understand advanced reactor technologies, since not many such experts exist.

"What is the NRC's method for determining what safety risk is posed by a reactor that no one has used yet?"

- Intervenor

Perhaps in part because of the difficulties with public involvement as a result of a lack of understanding about the technologies, there is some concern among intervenors about the safety of advanced reactors, in particular those that have not been field-tested. Several individuals expressed uncertainty regarding how these new technologies were being evaluated and felt that the assurances about enhanced safety were unsupported and over-confident. This sentiment was not limited to intervenor groups; a number of NRC staff members also expressed doubts about how certain the new safety features would be, absent real field testing.

Thoughts on how to have meaningful public participation for advanced reactors

"We have to know what the requirements are in order to have a focused dispute."

- Intervenor

Intervenors want to see clear standards in place before advanced reactors are licensed, rather than the standards being determined as the application moves along⁵⁹. They make the obvious point that without clear standards members of the public (and, presumably, the NRC) cannot gauge whether an application meets minimum safety requirements, and therefore cannot

have meaningful input in the licensing process.

Intervenors were divided on whether the pleading standard should be lowered for advanced reactors (and some opined that it should be lowered for all reactors). One suggested lowering the initial standard to something akin to notice-pleading and bringing in experts to elaborate on the contentions at the hearing stage. Others felt that the specificity required under the current standard could serve the efficient resolution of claims, but only if the NRC were to reduce or eliminate other barriers to filing contentions. For example, several intervenors suggested that enlarging the time for filing contentions or providing funding for intervenors would justify the high pleading standard, for all kinds of reactors.

Intervenors strongly prefer oral hearings over conducting contested hearings on the papers. A couple of intervenors mentioned that the public hearing process is important for transparency and is an important opportunity for the community to feel that they are part in the process. They mentioned that hearings are often packed. One intervenor said that it would be helpful to add the option to attend hearings virtually, because the hearings are often in remote locations, but that this should absolutely not replace in-person hearings.

Finding 3. There are high levels of distrust between stakeholder groups.

a. Intervenors distrust the NRC.

Intervenors we interviewed broadly expressed that the NRC is biased towards industry and does not give them a meaningful opportunity to participate in the contested hearing process.⁶⁰ This concern stemmed from both the mechanics of the process, which they believe make it extremely difficult to file contentions,⁶¹

"The NRC needs to have enough public confidence that people can go before them, lose, and not feel like they've been cheated."

- Intervenor

⁵⁹ The pending Oklo application was cited as an example of standards being determined as the application moves along.

⁶⁰ Intervenors did not distinguish between environmental and safety issues when speaking of their distrust for the NRC and applicants, and their dissatisfactions about the contested hearing process.

⁶¹ See Finding 2.b.

and from the NRC's actions outside the contested hearing process.⁶²

Every intervenor we interviewed perceives the NRC as pro-industry, though some are considerably more vehement in this view than others. More than one intervenor said we are wasting our time writing this report because the NRC is not interested in meaningful public participation and would ignore our recommendations to the extent that they make intervenors' lives easier.

Although some intervenors say that public mistrust of the NRC is so deep-seated that it would be hard to alter that perception, others believe that the NRC can improve its standing with the public by making the process fairer and more balanced.

Pro-applicant

A few intervenors noted that NRC staff members almost always side with the applicants, and nearly always conclude that a contention should be rejected. In their view, the NRC never rejects a license application: at most, they condition the license on the applicant revising the application. In other words, intervenors believe every application results in a license, unless the applicant voluntarily withdraws from the process.

"They [the NRC] do not respect the public's opinion. . . . Public participation is an annoyance. . . . They do not want the public to delay their predetermined approval of reactors."

- Intervenor

Other intervenors believe the NRC considers the applicant's financial position when deciding whether to grant a license, and that the NRC is reluctant to deny a license if the denial would cause the applicant to suffer a financial loss. They cited the NRC's decision to license the Diablo Canyon reactor despite a fault line being discovered near the reactor site.

Lack of responsiveness to concerns

Intervenors said they have informed the NRC of their concerns about the difficulty of intervening, but that nothing came of it. Several intervenors mentioned they view public meetings as a perfunctory exercise the NRC is obligated to run, and that nothing comes of them raising issues in these meetings. They say that in public meetings, rather than actually engaging the public's concerns, the NRC seeks to persuade of them of the safety of nuclear power and brushes aside or dismisses concerns.

"Starting off trying to convince someone that there is a new day dawning in nuclear power, and not respecting their legitimate concerns, is a showstopper for an open mind."

- Intervenor

⁶² To cite just one example, there is a perception that the NRC does not take its enforcement obligations seriously and turns a blind eye to infractions or imposes only minimal penalties.

Weak enforcement

Two intervenors opined that when the nuclear reactors were operational, the NRC did not enforce violations seriously enough—that “green” level violations⁶³ are given a slap on the wrist when any violation should be seriously enforced. In their view, this sort of laxity reflects a broader culture of preferential treatment of the industry that carries into the licensing process as well.

Bowing to political pressure

“The decks are stacked against environmental protection because money speaks a whole lot louder than science.”

- Intervenor

Several intervenors stated that the NRC is deliberately seeking to revive a dying nuclear power industry. They stated that there is a political push to keep the nuclear industry going, and that the NRC has political pressures on it to license nuclear reactors, especially because industry can afford lobbyists to ensure politicians supported nuclear power. Several intervenors explicitly stated that the NRC has been “captured” by industry.

b. Intervenors distrust advanced reactor technology.

Several intervenors have built up significant knowledge about LWRs through their work intervening in the licensing proceedings for LWRs. But none that we spoke to have technical knowledge about advanced reactors, and none felt confident about their safety.

“If the nuclear power industry wants a fresh start, they have to be able to deal with the downsides of their projects with the same zeal and enthusiasm as the upsides. And be transparent.”

- Intervenor

Historical distrust

Because they distrust the NRC and industry to begin with, intervenors also do not trust NRC and industry assurances that advanced reactors are safer than LWRs. One mentioned that the NRC is always asking the public to put its trust in the latest new technology

“If the ‘game plan’ for these meetings [about advanced reactors] is to persuade, rather than to educate, it will not be well-received.”

- Intervenor

as the answer to safety and environmental concerns. This, intervenors say, sends the message that the NRC has concluded that the previous “new” technologies were not as safe as they were claimed to be.

⁶³ See *Enforcement Process Diagram*, U.S. NRC, <https://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pro.html> (last updated Nov. 15, 2019).

Outstanding concerns about nuclear power, generally

A few intervenors stated they are concerned about the effects of nuclear radiation in general, so even if advanced reactors are less likely to have a catastrophic meltdown, they are uncomfortable with the baseline radiation levels. Two intervenors also mentioned concerns with how nuclear waste would be safely disposed of, which made them uneasy around all nuclear technology, old or new.

“My ultimate goal is to stop the licensing of reactors; my secondary goal is to ensure they are constructed in as safe and environmentally safe a way as possible.”

- Intervenor

Lack of transparency

A complaint we heard repeatedly from intervenors was that they do not believe the NRC and nuclear industry are being transparent. They stated that the NRC speaks openly about the positives of nuclear power but is not upfront about the negatives. Several intervenors opined that public meetings with the NRC, or with industry, are more for public relations purposes than to provide substantive information. Many, though by no means all, intervenors with spoke with are skeptical about the value of meeting with advanced reactor applicants to discuss the substance of the technology.

Concerns about implementing a GEIS

Intervenors fear that a “more streamlined hearing process” means that essential aspects of the application and contention process will be rendered obsolete. In particular, there is concern that the proposed Generic Environmental Impact Statement⁶⁴ (GEIS) for advanced reactors will not adequately cover the idiosyncratic dangers that might arise at a specific site, and will frustrate the public’s ability to raise legitimate environmental challenges. One intervenor recalled the problems that arose from using a GEIS for nuclear waste disposal at Yucca Mountain, where assumptions in the GEIS had to be amended after litigation. There is also a perception that the NRC uses the nuclear waste disposal GEIS as a shield against public participation, and a fear that a GEIS in the licensing process would be used the same way. Intervenors are also concerned that the push for generic documents could be expanded to other areas of licensing as well.

c. Industry members, and some NRC staff, do not trust intervenors to participate in the contested hearing process in good faith.

Industry members and some NRC staff are skeptical that many intervenors have a genuine interest in improving perceived flaws in an application. They view intervenors as generally anti-nuclear, and believe many merely seek to use the contested hearing process to prevent nuclear reactors from being licensed.

⁶⁴ See JEFFREY S. MERRIFIELD & REZA ZARGHAMEE, PILLSBURY, WHITE PAPER: ADVOCATING THE USE OF GENERIC ENVIRONMENTAL IMPACT STATEMENTS IN SUPPORT OF THE CONSTRUCTION AND OPERATION OF ADVANCED REACTORS (FEB. 19, 2019).

More optimism among newer than older industry members

Established industry members who have been in the industry for a long time are the most skeptical, with more than one stating that the vast majority of intervenors have a goal of preventing nuclear plants from being licensed. The two individuals we spoke with from a newer nuclear company, who have very little experience with intervenors, are more optimistic, stating that they are very interested in speaking with potential intervenors and explaining their technology.

“I have never seen intervenor be happy that their contention is dismissed.”

- Industry member

“We don’t want to be blindsided with a new issue when we’re 95% of the way through the process.”

- Industry member

Openness to early discussions with intervenors

When asked whether they would consider meeting with intervenors earlier in the process, most industry members expressed that they are not opposed to this in principle and that it would be a good idea if there were a genuine possibility of early resolution of an issue.

There is concern, though, that intervenors would use this meeting as another tool to stall the process, without any intention of reaching an agreement. Several industry members also pointed out that it would be difficult to separate out those who are genuinely interested in reaching agreement from those who seek to frustrate the process.

Finding 4. There is broad support among stakeholder groups for a simpler, more time- and cost-efficient contested hearing process for advanced reactors.

Efficient use of resources was one area in which there seems to be broad consensus: on some level almost everyone agrees that this is a great opportunity to make the contested hearing process less complicated and less costly. Different stakeholder groups have somewhat different incentives and motivations but the general agreement on the diagnosis may create an opportunity to find broad buy-in on solutions.

NRC staff

We heard from NRC technical staff and lawyers that the aspect of the process that takes the longest is the NRC staff’s review of the application and preparation of the EIS and SER. The delay stems from two sources.

The first is that the staff are performing multiple functions simultaneously: they are reviewing the licensing application, as well as responding to public comments and evaluating contentions. One NRC lawyer described this as the major bottleneck in the contested hearing process and the NRC staff confirmed how long this multi-part review takes. Many NRC staff we interviewed are not pessimistic about this—rather, they explained that the review takes a long time because of the level of care they exercise in reviewing the documents.

Second, we heard from industry members and NRC staff and lawyers that there is often a lengthy delay in the ASLBP's issuance of rulings after a contested hearing, and in the Commission's decisions on appeals. Two NRC lawyers we spoke with suggested there is little internal motivation to address this source of delay in the licensing process.

NRC members expressed a hope that each of these could be improved upon in an advanced reactor process, but that there is considerable uncertainty about how improvements might be achieved. The NRC's desire to simplify and improve the advanced reactor licensing process is buttressed by the Congressional directive to design a more efficient licensing process.

Industry members

A contested hearing can delay the commercial operation at a nuclear plant by years. Industry members complained that this can create significant barriers to completing a project, given the costs of litigating issues and the opportunity cost of deferring income from operations. NEI has even documented the increase, over time, of the information required by NRC staff to review a license application, and the concomitant costs to applicants and NRC staff.⁶⁵

From the industry perspective, the expense and length of contested hearings are even less justifiable for advanced reactors. Applicants point to several new layers of protection in these technologies, including passive and active safeguards, and the fact that cores cooled by advanced substances would take weeks or months to heat up to the point of a meltdown, should all safeguards fail. Because in their view advanced reactors are inherently safer, there should be fewer safety issues, the applicant and NRC will be able to address those that arise, and adjudication of intervenor claims should be straightforward. Likewise, applicants argue that because advanced reactors use less fissile material and generate less waste, they pose less risk to the environment and should trigger fewer environmental contentions.

Industry groups argue that drawn-out litigation could have a severe adverse impact on many of the developers of advanced reactors—newcomers to the field of nuclear power who are typically lack the capital resources of the major utility companies that operate the existing fleet of LWRs. As such, they are in a far weaker position to withstand delays that accompany the current contested hearing process.

Intervenors

Intervenors argue that requiring contentions to be filed before the staff completes its review safety and environmental reviews places an undue burden on them. They support changes that eliminate the labor- and cost-intensive process of repeatedly amending their contentions as the application evolves and the staff prepare their reports.⁶⁶

Intervenors with familiarity contesting advanced reactor applications under Part 52 are finding it more difficult to identify potential safety and environmental concerns, given that even the staff's understanding of the technology is evolving in real time as it evaluates the application. There is

⁶⁵ See NUCLEAR ENERGY INSTITUTE, RECOMMENDATIONS FOR ENHANCING THE SAFETY FOCUS OF NEW REACTOR REGULATORY REVIEWS (Apr. 2018), <https://www.nrc.gov/docs/ML1811/ML18116A053.pdf>.

⁶⁶ See Finding 2.c (explaining intervenors' frustrations with the current process).

a sense that intervenors essentially have to guess where the issues will arise. This is an inefficient way to identify legitimate issues, and also creates a risk that legitimate issues might be missed altogether.

Finding 5. There is a widely shared desire for more clarity around the procedural rules governing the application and contention process.

We spoke largely with individuals who, either in representing their organization or in their individual capacity, have extensive experience with the reactor licensing process, and with contested hearings in particular. They acknowledge that the procedural rules can be difficult to parse for even experienced lawyers, let alone for newcomers or unrepresented parties.

"There are lots of persnickety NRC-specific rules that make it difficult even for seasoned attorneys to know the procedures without experience."

- NRC Staff Member

This view is by no means limited to intervenors. Some NRC staff and lawyers also see the complexity of the rules as an impediment to external stakeholders' ability to engage in the process efficiently and effectively. And while the data we gathered applies to the existing process for LWRs, the need for clarity is heightened by the number of new players who are likely to be involved in the licensing of advanced reactors. One new industry member noted that the rules and process are not communicated in simple form, creating uncertainty about what steps are required and how parties should expect the process to play out.

As one NRC staff member noted, the complexity and lack of clarity reduce the pool of potential intervenors to more sophisticated players with funding and licensing experience. Potential intervenors may be deterred from bringing up legitimate issues because they do not have the resources or understanding to take part in the process. Alternatively, intervenors who have filed contentions might have claims dismissed for failure to meet the complex procedural rules.

Findings summary

To summarize, we found some major points of tension. We recognized the challenge facing the staff of having to be neutral at some points and defend their work at others. We found a deep distrust between different stakeholder groups, especially between intervenors on the one hand, and industry members and staff on the other. This distrust leads to inefficiencies in the process: intervenors are frustrated at not being heard outside the contested hearing process, so are incentivized to bring up all their issues in the form of contentions, and stakeholders do not trust each other enough to resolve issues in a more productive way. All these tensions are exacerbated by the introduction of new technologies. But we also found some shared values among all

"Everyone shares similar goals: of meaningful interaction, a timely opportunity to provide concerns, and efficient use of everyone's resources."

- Industry member

stakeholders: support for meaningful public participation, concerns about the efficient use of resources, and, most crucially, a strong belief in the importance of safety. These shared values—along with the existing strong institutional values and knowledge of the NRC—can form the foundation for a more efficient contested hearing process for advanced reactors.

RECOMMENDATIONS

Our recommendations are driven by DSD principles about what makes for an efficient process for engaging multiple stakeholders in a controversial issue.

First, there is a definitive connection between greater public participation and positive outcomes. This has implications for efficiency and accuracy, as well as for questions of procedural justice and perceptions of fairness. The benefits of public participation in agency proceedings, especially regarding environmental decision-making, are well-recognized. In addition to being mandated by NEPA, public participation can “improve[] the quality of federal agencies’ decisions about the environment,” increase perceived legitimacy, and increase the likelihood that agency decisions will be effectively implemented.⁶⁷ Throughout our recommendations, we discuss “meaningful” participation. By this, we mean participation that has a realistic opportunity of affecting an outcome. While opportunities for public participation are important for public trust of government entities, mere participation is not sufficient—in order to develop public trust, member of the public must have confidence that their participation can influence outcomes,⁶⁸ and that they are not merely wasting their time.

Lind and Ardt have identified three factors that are most important in determining whether, in interacting with the government, individuals feel fairly treated.⁶⁹ Those three factors are voice, respect, and explanations.⁷⁰ Voice relates to participants feeling as though they have the ability to be heard by the decision-makers, and the feeling that “the input was actually given consideration.”⁷¹ Respect is a culturally nuanced factor, but one that, when present, also has positive effects on perceptions of fairness.⁷² In particular, respectful treatment “carries the message that one is in fact a valued member of the state.”⁷³ Similarly, clear explanations “give the citizen reason to believe that his or her participation in the process is real, that he or she is being treated like someone worthy of receiving the information needed to navigate the process and understand decisions.”⁷⁴

⁶⁷ *Public Participation Guide: Internet Resources on Public Participation*, EPA, <https://www.epa.gov/international-cooperation/public-participation-guide-internet-resources-public-participation#benefits> (citing NATIONAL RESEARCH COUNCIL, PUBLIC PARTICIPATION IN ENVIRONMENTAL ASSESSMENT AND DECISION MAKING (2008)) (last visited Dec. 7, 2020). This website has many resources that explain more in detail the importance of public participation to agency decision making.

⁶⁸ Lisa Schmidhuber, Alex Ingram & Dennis Hilgers, *Government Openness and Public Trust: The Mediating Role of Democratic Capacity*, PUB. ADMIN. REV. 4. (2020). Public participation also risks resulting in distrust if expectations are set and then not fulfilled. *Id.*

⁶⁹ E. Allan Lind & Christiane Arndt, *Perceived Fairness and Regulatory Policy: A Behavioural Science Perspective on Government-Citizen Interactions*, 6 OECD WORKING PAPERS (2016), <http://dx.doi.org/10.1787/1629d397-en>.

⁷⁰ *Id.* at 9.

⁷¹ *Id.* at 20.

⁷² *Id.* at 24.

⁷³ *Id.*

⁷⁴ *Id.*

Typically, “the regulatory process encourages conflict, rather than acting to reconcile opposing interests”⁷⁵ One result of this conflict is the that parties “continue the controversy in the form of endless petitions for review, clarification, and litigation before the agency and the courts.”⁷⁶ In other words, the structural emphasis on adversarial processes is a primary source of waste and inefficiency. Thus, there is tremendous value in systems that emphasize collaboration, trust-building, and meeting mutual interests. These systems will tend to minimize strife and strategic delay, and will generate solutions that have greater welfare overall.⁷⁷ Such an approach is especially valuable in addressing conflict that arises in the sphere of government regulation.

To counteract the regulatory bent toward litigation, practitioners recommend constructing alternative systems that help develop trust and focus on consensus building. Experts consider trust to be “central to democratic government, to the formation of public policy, and to its implementation.”⁷⁸ Especially in the environmental context, a distinct field known as Environmental Conflict Resolution has emerged, focused on achieving joint goals through collaboration and facilitated mediation.⁷⁹

In creating systems that work for all parties, many experts in DSD recommend a “mutual gains approach” to resolving complex disputes.⁸⁰ Susskind and Field operationalize such an approach in six principles:

1. Acknowledge concerns of the other side,
2. Encourage joint fact finding,
3. Offer contingent commitments to minimize impacts if they do occur; promise to compensate knowable but unintended impacts,
4. Accept responsibility, admit mistakes, share power,
5. Act in a trustworthy fashion at all times,
6. Focus on building long-term relationships.⁸¹

These six principles animate our recommendations that touch on building trust between stakeholders. They should be referred to when designing strategies to implement each of them.

⁷⁵ John T. Dunlop, *The Limits of Legal Compulsion*, 27 LAB. L.J. 67, 70 (1976).

⁷⁶ *Id.*

⁷⁷ See WILLIAM L. URY, JEANNE M. BRETT & STEPHEN B. GOLDBERG, *GETTING DISPUTES RESOLVED: DESIGNING SYSTEMS TO CUT THE COSTS OF CONFLICT* (1988).

⁷⁸ Kenneth P. Ruscio, *Trust, Democracy, and Public Management: A Theoretical Argument*, 6 J. PUB. ADMIN. RESEARCH & THEORY 461, 462 (1996).

⁷⁹ See *generally* AMSLER ET AL., *supra* note 6 at 309-318.

⁸⁰ See, e.g., LAWRENCE SUSSKIND & PATRICK FIELD, *DEALING WITH AN ANGRY PUBLIC: THE MUTUAL GAINS APPROACH TO RESOLVING DISPUTES* 124-52 (1996); CONSENSUS BUILDING INSTITUTE, *CBI’S MUTUAL GAINS APPROACH TO NEGOTIATION* (2014), https://www.cbi.org/assets/resource/file/CBI_MGABrief_2014.pdf.

⁸¹ SUSSKIND & FIELD, *supra* note 81, at 124-52.

Recommendation Summary

Our aim here is to identify conceptual approaches we believe would address the concerns we heard from stakeholders, and serve a number of important goals: increasing the efficiency of licensing safe nuclear reactors, allowing the public to meaningfully participate in this process, and improving public confidence in the hearing process and in the NRC as an agency. Based on our understanding of the NRC and its processes, input we collected from internal and external stakeholders, and key DSD principles, we recommend that the NRC consider these five broad recommendations:

Recommendation 1. Focus on and strengthen the NRC’s culture of independence, transparency, and impartiality toward intervenors and industry members through rigorous internal training and simplified public-facing resources.

Recommendation 2. Institute a collaborative process to encourage early identification and resolution of issues.

Recommendation 3. Move the deadline for filing contentions until after the NRC staff have finished the SER and EIS.

Recommendation 4. Continue to require that contested hearings be conducted in-person, on a live record, whenever practicable.

Recommendation 5. Institute or enforce NRC deadlines for contested hearing decisions.

We recognize that the NRC technical staff and attorneys have vastly more experience with how the application and contested hearing process works in practice. We are certain that the practical expertise of NRC staff will be essential to determining which of these recommendations are practicable within the agency, and fine tuning them so that they are suitable for implementation.

Recommendation 1. Focus on and strengthen the NRC’s culture of independence, transparency, and neutrality toward intervenors and industry members alike through rigorous internal training and simplified public-facing resources.

A major problem we encountered was that the NRC, industry members, and intervenors seemed to have fundamental misunderstandings about each other, leading each party to assume the worst and heightening distrust. We believe that this adversarial stance makes it harder to find efficiencies in the contested hearing process, because parties are determined to litigate or avoid issues, rather than solve them in more effective ways. The NRC is required to be impartial

in its review of applications and in its dealings with external stakeholders.⁸² We found that the NRC members took their roles very seriously and genuinely wanted to engage with the public (Finding 1). Intervenors felt the NRC was biased toward applicants (Finding 3.a). And some NRC members noted a tension between being an impartial reviewer yet having to take an adversarial position during the hearing. This recommendation is intended to bridge the gap between the NRC staff's understanding of themselves and the agency as neutral public servants, and intervenors perception of the agency and its staff as biased toward industry.

Neutrality is difficult to achieve in agency reviews. Pierce and colleagues have referred to "decider neutrality" as "one of the most complex aspects of administrative practice."⁸³ Yet it is crucial in getting stakeholders to participate in the process and to defer to decisions that have been made, rather than seeking to block them through other means.⁸⁴ A perceived lack of neutrality leads parties to feel that a process is unfair, which undermines the credibility of, and confidence in, public agencies; while confidence in a fair and open process makes parties more likely to voluntarily comply with that process.⁸⁵ Better communication of neutrality and openness, then, can be crucial to increasing effectiveness and efficiency of the contested hearing process.

As such, we recommend that the NRC:

- a. Implement trainings to help NRC staff members more effectively navigate the complexities and challenges of their roles in the organization, and
- b. Create and publicize simpler guides to demystify the process for contesting advanced reactor applications.

a. Implement trainings to help NRC staff members more effectively navigate the complexities and challenges of their roles in the organization.

We recommend that the NRC implement staff trainings or tabletop exercises to help staff members sharpen and define their roles within the organization, particularly as neutral parties when reviewing applications. Trainings could focus on the ethics of impartiality and the importance of maintaining a neutral stance against pressures exerted by parties. One useful type of training are tabletop exercises: scenario-based discussions that allow staff members to

⁸² 5 CFR § 2635.601 (2020); *see generally Values*, *supra* note 24. NEPA regulations also provide that agencies should avoid any conflicts of interest in preparing EISs. *See* 40 C.F.R. § 1506.5 (2020).

⁸³ RICHARD J. PIERCE, JR., ET AL., *ADMINISTRATIVE LAW AND PROCESS* 455 (3d ed. 1999).

⁸⁴ *See* Tom R. Tyler, *Does the American Public Accept the Rule of Law? The Findings of Psychological Research on Deference to Authority*, 56 DEPAUL L. REV. 661, 663–64 (2014) (finding that individuals are more likely to defer to a decision where they feel the process that gave rise to that decision was fair—and that the impartiality of the decision-maker was a key factor in whether individuals considered the process fair).

⁸⁵ Robert R. Kuehn, *Bias in Environmental Agency Decision Making*, 45 ENV'T. L. 957, 961 (2015).

take on unfamiliar roles to implement appropriate policies.⁸⁶ While often enacted in emergency preparedness programs, tabletop exercises can also be a highly effective way to allow staff members to become more comfortable in their roles by understanding the motivations and interests of other parties involved in regulatory processes.

Training to reinforce impartiality has proven effective in the judicial realm. A report by the Office for Democracy and Governance, a division of the U.S. Agency for International Development (USAID), makes note of various training systems used by different countries for promoting the neutral application of law.⁸⁷ Several areas of focus could also be applied to trainings for staff members, including working through complex ethical conflicts based on practical issues and fostering on-going contact between staff members and instructors. USAID has emphasized that these sorts of trainings are valuable not just in newer judicial structures such as those in emerging democracies, but also to strengthen the decision-making of well-established systems.

In addition to reinforcing the importance of neutrality, these trainings could help NRC staff members have the most productive interactions possible with members of the public. Being able to clearly articulate to stakeholders the nature of their role, as well as that of the NRC, will help to manage expectations and make clear when the Agency is constrained in what it can do. These are important steps to building a culture of trust between parties (Finding 3).

By focusing on these steps, NRC staff members can act as positive change-makers who bring a cooperative attitude and build trust among the external stakeholders. This process will also help to reduce the amount of litigation that is filed in contesting licensing applications.

Expected benefits	Potential drawbacks
Help staff members understand their roles and know when to evaluate, when to support the public, and when to defend their position	Increased time and cost
Enforce importance of neutrality	
Improve public perception	

Summary table of expected benefits and potential drawbacks

b. Create and publicize simpler guides to demystify the process for contesting advanced reactors applications

⁸⁶ See, e.g., Nanette Moss, *The Importance of Tabletop Exercises—and How to do them Properly*, ENV'T. HEALTH & ENG'G, INC. (June 4, 2019), <https://eheincc.com/blog/the-importance-of-tabletop-exercises-and-how-to-do-them-properly/>.

⁸⁷ OFFICE OF DEMOCRACY AND GOVERNANCE, GUIDANCE FOR PROMOTING JUDICIAL INDEPENDENCE AND IMPARTIALITY (2002).

We recommend developing a simple guide to how the licensing process generally, and the contested hearing process in particular, work. This could include requirements for intervenors, a timeline of steps or stages of the process, and templates for various documents that are filed. Posting the rules for certain topics on individual webpages, with useful diagrams, would be a start,⁸⁸ though future guides could simplify even further.

The NRC is presently producing good literature summarizing the technical aspects of advanced reactor technologies and making these available to the public in the form of “vision and strategy” staff reports.⁸⁹ However, we have heard from several newer individuals who have encountered the current hearing process that there is not the same availability of technical guides to the procedures of the contested hearing process.⁹⁰ While there is a webpage that nominally seeks to explain the Part 2 process, as of this Report it is sparsely populated and does not provide much beyond further links to the scope of and recent revisions to Part 2.⁹¹ As such, these stakeholders expressed that they felt confusion at the process and what they were expected to do at various stages. This problem promises to become more acute under Part 53, as newer parties seek licenses for advanced reactors and as a new generation of intervenors joins the fray.

Why create explanatory guides?

The value of procedural explainers is highlighted by Lind and Ardt, who note that such materials can be as effective as clear judgment criteria for helping citizens feel involved in government processes.⁹² They encourage the development of “road maps” of processes and alternatives that clearly lay out what an individual needs to do in order to participate in the process. They also stress the value of including clear timelines in such a road map.⁹³

As mentioned, there is currently a vanishingly small pool of individuals who are capable of litigating as intervenors in a contested hearing, given the particularity of the rules. This pool is likely to be even smaller for advanced reactors, due to the steep learning curve for the variety of new technologies involved. This small market for individuals affects issues of procedural justice, but can also impact substantive issues surrounding the siting of advanced reactors. The intervening public performs a valuable role as an additional check on possible adverse impacts;

⁸⁸ Cf. *The Rulemaking Petition Process*, U.S. NRC, <https://www.nrc.gov/about-nrc/regulatory/rulemaking/petition-rule.html> (last updated Nov. 7, 2017).

⁸⁹ See, e.g., U.S. NUCLEAR REGULATORY COMMISSION, NRC VISION AND STRATEGY: SAFELY ACHIEVING EFFECTIVE AND EFFICIENT NON-LIGHT WATER REACTOR MISSION READINESS (Dec. 2016), <https://www.nrc.gov/docs/ML1635/ML16356A670.pdf>.

⁹⁰ While the rules are laid out in various provisions under Part 2, these are laid out in a way that may be confusing to non-lawyers.

⁹¹ *10 CFR Part 2: Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders*, U.S. NRC, <https://www.nrc.gov/about-nrc/regulatory/adjudicatory/part2revisions.html> (last visited Dec. 7, 2020).

⁹² Lind & Ardt, *supra* note 70 at 24–25.

⁹³ See Recommendation 4.d.

this role is most pronounced when it comes to local issues, such as those addressed in midstream siting issues.⁹⁴

This is an area where the expertise of the NRC staff is best leveraged. Members of the OGC and of the ASLBP who handle litigation could be tasked with creating a draft of these guidelines, based on the rules laid out in Part 2 (or in a future rule to cover advanced reactor licensing). They should then form a citizen advisory board, consisting of experienced members of the public and industry, to evaluate the guidelines against their actual experience and correct discrepancies. Such a process would empower the public by including them, much like a negotiated rulemaking. It would also allow non-experts in the process to help by evaluating how clear the instructions are.

Summary table of expected benefits and potential drawbacks

Expected benefits	Potential drawbacks
Improve public perception	Some financial and human resource cost to create and maintain guides and publications
Clarified procedures/process	
More accurate contentions	
Saves time	

Recommendation 2: Institute a collaborative process to encourage early identification and resolution of issues

Stakeholders of all stripes were unified in their criticism of the length, cost, and complexity of the contested hearing process.⁹⁵ The adversarial nature of the current process not only contributes to the cost, length, and complexity, it also tends to result in public intervenors not feeling heard or valued in the process. This recommendation directly targets the cost and complexity issue, in a way that simultaneously opens up the opportunity for dialogue between different parties with the hope of also making the intervenors feel they have a meaningful opportunity to be heard.

Engaging in collaborative dialogue with stakeholders is crucial for agencies seeking to make decisions with the buy-in of the public.⁹⁶ Engaging with stakeholders as early as possible in the

⁹⁴ In the environmental context, “midstream” refers to issues that relate to stages between policymaking and specific enforcement, such as proposed siting of facilities. See AMSLER ET AL., *supra* note 6 at 310.

⁹⁵ See Finding 4.

⁹⁶ SARA COHEN, CONSENSUS BUILDING INSTITUTE, COLLABORATIVE APPROACHES TO ENVIRONMENTAL DECISION-MAKING: A STATE AGENCY’S GUIDE TO EFFECTIVE DIALOGUE AND STAKEHOLDER ENGAGEMENT (2013), https://www.cbi.org/assets/files/NE%20Agency%20Guide%20to%20SE_FINAL.pdf

process demonstrates that an agency takes public opinion seriously and can result in reasoned conversation that leads to better outcomes.⁹⁷

We recommend that the NRC encourage, and provide a collaborative process for, early identification and resolution of problematic aspects of an application. We expect that implementing such a process would (i) provide intervenors a more meaningful opportunity to have their concerns heard and addressed (Finding 2.d), (ii) help resolve the high levels of distrust we identified among stakeholder groups (Finding 3), (iii) enable the NRC staff and applicants to understand intervenors' concerns with an application (Finding 3), and (iv) actually resolve more issues early, thereby reducing the cost and length of the contested hearing (Finding 4).

Specifically, we recommend that the NRC:

- a. Facilitate meetings between industry members and intervenors to identify and, where possible, resolve issues early; and
- b. Encourage joint fact finding.

Almost every interviewee liked this idea in theory: industry members felt that any resolution of issues in a non-adversarial and more cost- and time-efficient manner would be a good idea and intervenors wanted their concerns to be genuinely heard and addressed (even if some of them also oppose nuclear power on principle). NRC staff were enthusiastic about a mechanism to resolve issues in a time-efficient way. Many interviewees, from all sides, had concerns with how this would work in practice. Industry members were concerned that intervenors would use early intervention as a stalling tactic in addition to filing contentions; intervenors were concerned that industry and the NRC would not take their concerns seriously.

It is important, then, if early resolution of issues is to be encouraged, that all parties buy into the process. We have attempted, in our recommendation, to include safeguards designed to ensure the process is not simply seen as a box to check before going to litigation but provides a meaningful forum by which disputes can be resolved.

a. Facilitate discussions between industry members, intervenors, and NRC staff to identify and resolve issues early.

We recommend that the NRC hold a series of intensive facilitated meetings between applicants and intervenors at an early stage in the process—perhaps even before the applicant has filed its complete application, or in any event soon thereafter.

Facilitation is a process whereby a third-party neutral “moderates discussions, schedules meetings, records the discussions, and gives feedback” to help stakeholders have “constructive

⁹⁷ JONATHAN RAAB & LAWRENCE SUSSKIND, NEW APPROACHES TO CONSENSUS BUILDING AND SPEEDING UP LARGE-SCALE ENERGY INFRASTRUCTURE PROJECTS 10 (June 23, 2009), <http://www.lawrencesusskind.com/wp-content/uploads/2013/08/Raab-Susskind-German-Consensus-Building-Negotiation.pdf> (contrasting this to a “Decide-Announce-Defend” model where agencies elicit public comment as a formality).

discussions and achieve better mutual understanding of interests and values.”⁹⁸ Using a professional facilitator to guide discussions leads to more efficient outcomes, because the facilitator can use their expertise to reduce the problems typically associated with dispute resolution of antagonistic groups of stakeholders, including “miscommunication, different perspectives, and limited time.”⁹⁹ In so doing, facilitation “enable[s] stakeholders to engage with others in ways otherwise unavailable through litigation or traditional administrative processes.”¹⁰⁰

Facilitation has been widely used in resolving environmental disputes. For instance, the Hudson River Sustainable Shorelines Project in New York uses facilitation to convene stakeholders to identify and resolve issues relating to shoreline management.¹⁰¹ A requirement of this sort has also been employed in New York for the state siting of energy facilities. Applicants are required to complete a “preliminary scoping statement” in which they lay out their proposed facility and what sort of information they need to gather for the application.¹⁰² This document is then made available to members of the public, in order to “encourage early participation from state agencies, municipalities, environmental organizations, and other interested groups.”¹⁰³ In addition, the municipality in which the proposed facility will be sited is given the right to appoint two “ad-hoc” members, drawn from its residents, to the Project Siting Board that oversees the licensee’s construction.¹⁰⁴

Implementation

a. Incentivizing intervenors

The value of a collaborative process depends to some degree, of course, on the extent to which the parties buy into the process.¹⁰⁵ Merely going through the motions is less likely to yield the benefits of early identification and resolution of issues. To incentivize intervenors’ participation in these meetings, the contested hearing rules could liberalize the filing deadlines (see Recommendation 3) for parties who have (i) participated in the early process and (ii) identified during that process, with reasonable specificity, the issues on which the party ultimately intends to intervene.

⁹⁸ Lara B. Fowler & Xiaoxin Shi, *Human Conflicts and the Food, Energy, and Water Nexus: Building Collaboration Using Facilitation and Mediation to Manage Environmental Disputes*, 6 J. ENV’T. STUD. SCI. 104, 106–07 (2016).

⁹⁹ Fowler & Shi, *supra* note 99, at 107.

¹⁰⁰ *Id.* at 106.

¹⁰¹ *Hudson River Sustainable Shorelines*, HRNERR, <https://www.hrnerr.org/hudson-river-sustainable-shorelines> (last visited Dec. 7, 2020). This project engaged professional mediators and facilitators from CBI. Fowler & Shi, *supra* note 99, at 106.

¹⁰² CONSENSUS BUILDING INSTITUTE, RAAB ASSOCIATES, RUBIN & RUDMAN, MULTI-STATE ENERGY FACILITY SITING REVIEW 20 (Nov. 18, 2013).

¹⁰³ *Id.*

¹⁰⁴ JAMES AUSTIN & ANDREW DAVIS, AN INTRODUCTION TO NEW YORK STATE ELECTRIC GENERATION SITING (Dec. 19, 2012), <https://sitingcommission.vermont.gov/sites/vegspc/files/documents/publications/NY-Austin-121912.pdf>.

¹⁰⁵ AMSLER ET AL., *supra* note 6, at 21.

To be sure, an intervenor could participate in the process with no intention of resolving disputes and with the goal of consuming valuable time at the front end of the process, only to turn up later with a petition to intervene under the more liberal timeline. We offer two responses to this concern. First, even parties with no intention to resolve disputes may find common ground under the guidance of a skilled facilitator. Second, requiring would-be intervenors to identify the challenges they intend to raise allows the applicant to refine the application accordingly. Thus, even if no issues are resolved in the early engagement stage, by the time petitions to intervene are filed (see Recommendation 3), many potential challenges already will have been addressed and resolved by the applicant.

Finally, this recommendation, if implemented, should bear fruit over the longer term, through increased trust in the process and between the parties, ultimately resulting in fewer “spoiler” intervenors.

b. Incentivizing applicants

Applicants must also be incentivized to resolve issues that are brought to their attention during an early meeting, in order for the early meetings to improve the efficiency of the process. There are tangible benefits that should appeal to applicants. In particular, knowing intervenors’ concerns early in the process allows the applicant to tailor their application to protect it from contentions later in the process. The final application would therefore likely be subject to fewer contentions, ultimately saving the applicant time and money in the form of a shorter contested hearing process, quicker final ruling on the application, and reduced lost-opportunity costs. As noted above, early interaction should also help to build trust between the parties, and will increase confidence in the process overall.

One industry representative also voiced frustration that applicants are not permitted, in most circumstances, to challenge NRC staff determinations that an application is insufficient in some respect. We have not explored this in depth, but it would be worth considering whether, as added incentive, applicants who participate in the early engagement process should be granted the right to a hearing on issues where it disagrees with the NRC staff’s position.

c. Voluntary v. mandatory process

Collaborative processes often are designed on the premise that participation is voluntary.¹⁰⁶ We acknowledge that a pure opt-in process may not be practical here. In essence, it would require establishing two separate, and not-quite-parallel application tracks – one for parties who opt into the early engagement process, and one for those who opt out. An applicant may wish to opt in, with one or more (or all) intervenors opting out. Or an applicant may opt out, where all or some subset of intervenors wished to opt in. In any case, the administrative burden on the NRC, and the added confusion of conflicting sets of rules would seem to outweigh the benefits of a purely voluntary early engagement process. We recommend making the early engagement process mandatory, in much the same way that some courts have instituted mandatory mediation¹⁰⁷. Although participation is a “mandatory” condition of seeking

¹⁰⁶ *Id.*

¹⁰⁷ See <https://www.justice.gov/archives/olp/file/827536/download> (chart showing which federal courts have instituted mandatory mediation)

adjudicatory relief, the principle of voluntariness ensures that no party is compelled to dismiss or otherwise forego a claim.

Choosing a facilitator

Typically, a facilitator is understood to be a neutral third-party, since their goal is to facilitate the discussion, not to take part in it, and a non-neutral facilitator might raise concerns among stakeholders with whom the facilitator does not align.¹⁰⁸

We understand that the NRC has a facilitator corps,¹⁰⁹ which could be used to conduct these facilitated discussions. Having an NRC facilitator might be less costly, and the facilitator's expertise in nuclear technology and in the licensing process would likely help them effectively facilitate discussions. Yet there is a danger that an NRC facilitator would be perceived as biased, which would undermine the free exchange of ideas and interests that facilitation is supposed to engender. Ideally, then, a facilitator would be external to the NRC, though an internal facilitator agreed to by all parties could be just as effective.¹¹⁰

Difference from current public meetings

The NRC currently holds public meetings, but the facilitated early engagement process we are recommending would be fundamentally different. As we understand it, the public can offer comments in public meetings, but the format of these meetings—of all categories—severely limits meaningful engagement. In category 1 and 2 hearings, there are rules around when members of the public can comment,¹¹¹ and even in category 3 meetings, the usual practice of the NRC staff (as we understand it) is to acknowledge the speaker's comment but not engage in dialogue. These features of current public meetings mean that the public is not on a level playing field with the applicant—in category 1 meetings, they are guests in the applicant's meeting with the NRC and are not invited to speak. Even in category 3 meetings, staff are not required to engage in a back and forth dialogue with members of the public.¹¹²

Facilitated discussions, on the other hand, would bring all three parties—applicants, intervenors, and the NRC—together, as equals, to discuss concerns. It is imperative that these meetings do not take the form of the NRC or applicant explaining to the intervenor why they should not be

¹⁰⁸ Ann Porteus, Nanci Howe & Tommy Woon, *Facilitating Group Discussions*, STANFORD, <https://web.stanford.edu/group/resed/resed/staffresources/RM/training/facilguide.html> (last visited Dec. 7, 2020) (facilitators should be “objective” because their role is “to create an environment for all to have a chance to participate”). *But cf.* Sean F. Nolon, *Second Best Practices?: Addressing Mediation's Definitional Problems in Environmental Siting Disputes*, 49 IDAHO L. REV. 69 (2012) (arguing that non-neutral third parties can successfully mediate environmental siting disputes).

¹⁰⁹ See Lance Rakovan, *Acting as a 'Neutral' to Help NRC Meetings Be More Productive*, U.S. NRC BLOG (Dec. 27, 2011), <https://public-blog.nrc-gateway.gov/2011/12/27/acting-as-a-neutral-to-help-nrc-meetings-be-more-productive/>.

¹¹⁰ A model could be the ASLBP, who are viewed as being independent from the NRC staff, despite being a part of the NRC.

¹¹¹ See NRC Management Directive 3.5 (Dec. 23, 2011), <https://www.nrc.gov/docs/ML1129/ML112971635.pdf>.

¹¹² *Id.* at 6-7.

concerned, but rather that all parties seek to understand each other's interests and concerns. To alleviate concerns that a party's comments might be used against them later in the process, the early engagement rules could specifically prohibit such use.¹¹³

Summary table of expected benefits and potential drawbacks

Potential benefits	Potential drawbacks
Shows intervenors the NRC takes them seriously	Risks lengthening the process if used as a delay tactic
Brings issues to the applicant and NRC's attention early	Requires investment of NRC staff and attorney time and resources
Reduces number of contentions	
More resource-efficient	

b. Encourage joint fact-finding between industry members, intervenors, and the NRC.

We recommend engaging applicants and intervenors in joint fact finding for disputes arising from a license application. Professor Susskind and others have identified joint fact-finding as a more efficient and more equitable response to traditional technocratic decision-making. Joint fact finding is a "cooperative inquiry that improves the way relevant expert knowledge is brought forward into controversial policy and regulatory discussions."¹¹⁴ According to the MIT Science Impact Collaborative, it involves engaging stakeholders to "[c]ollectively identify critical scientific and technical questions; scope their needs and how these questions might be answered in practice; commission studies from experts that all parties support and trust; and collectively receive and evaluate the results."¹¹⁵

Though scientific analyses are somewhat objective, they are also the product of the subjective interpretations of the analyst. The public would be rightly skeptical that scientific determinations made without them are truly objective and unbiased. Joint fact-finding is more likely to lead to findings that the public trusts. Joint fact-finding is especially appropriate for disputes involving highly technical or scientific elements, like those at issue here.

The NRC could institute joint fact-finding by convening experts from the public to collaborate with industry-side and NRC experts to agree on mutually acceptable probabilistic risk formulae for advanced reactors, or mutually acceptable ways to deal with safety or environmental concerns in particular applications, as two examples. We would anticipate that the early

¹¹³ See, e.g., Fed. R. Evid. 408

¹¹⁴ Peter S. Adler, *Towards a More Humble Inquiry: The Practice of Joint Fact-Finding*, in JOINT FACT-FINDING IN URBAN PLANNING AND ENVIRONMENTAL DISPUTES (Masahiro Matsuura and Todd Schenk, eds., 2017).

¹¹⁵ *Joint Fact-Finding*, MIT Science Impact Collaborative, <https://scienceimpact.mit.edu/joint-fact-finding> (last visited Dec. 7, 2020).

engagement process described above would identify areas that would benefit from joint-fact finding.

Summary table of expected benefits and potential drawbacks

Potential benefits	Potential drawbacks
Prevents issues arising later	Requires time investment up front
Allows pooling of resources and expertise	Risks lengthening process, particularly if joint fact-finding does not result in agreement on points of contention
Clarifies potential issues	Requires careful legal analysis for compliance with fiscal and administrative limitation on government agencies
Increases public trust	

Recommendation 3. Move the deadline for filing contentions until after the NRC staff have finished the Safety Evaluation Report and the Environmental Impact Statement.

The “moving target” nature of an application under the current process, coupled with strict timelines for filing and amending contentions, places an enormous burden on intervenors and undermines faith in the fairness of the process. (Findings 2.c and 3.a) The process also consumes valuable staff time to evaluate and respond to petitions and multiple amended petitions. (Findings 2.c and 4). We recommend delaying the time for filing contentions until after the NRC has completed its staff reviews. This idea finds considerable support among stakeholder groups—primarily intervenors, but also at least one member of the Commissioners’ office and some members of the ASLBP and OGC.

We acknowledge that this recommendation may be controversial. Moving out the deadline for filing contentions could appear inconsistent with Congress’s directive to the NRC to improve timeliness and minimize delays in the license process for advanced reactors. Moreover, applicants and some NRC staff expressed concern that moving the filing deadline until after the SER and EIS are complete will encourage intervenors to “sandbag” the process with issues that could have been raised much sooner. Applicants in particular may be resistant to this change.

Nonetheless, we believe moving the contention deadline would actually (i) increase efficiency and reduce litigation; (ii) address the prohibitive cost and litigation quagmire that frustrate intervenors and applicants; (iii) demonstrate a genuine interest in promoting meaningful public participation in the licensing process; (iv) improve the NRC’s standing with intervenors and, over time, reduce distrust of the NRC; and (v) encourage collaborative problem-solving. In other words, this recommendation is aimed at reducing the length, cost, and complexity of the contested hearing process (Finding 4) and improving intervenor trust of the NRC (Finding 3.a), while still protecting applicants and the NRC from frivolous litigation (Finding 3.c). To avoid

blindsiding either the applicant or the NRC staff reviewing the application, we strongly encourage implementing this change alongside the early engagement process detailed in Recommendation 2. Another option, rather than tying the deadline for filing contentions to the completion of the SER and EIS, would be to tie the deadline to the completion of a “draft” SER and the draft EIS.¹¹⁶

Issues with the current filing deadlines

Under the existing licensing process for LWRs, an application is accepted for docketing when the NRC staff makes a finding that the application is “complete”, i.e. that it contains all the requisite information. The docketing event is published in the Federal Register, triggering a 60-day period for members of the public to challenge the sufficiency of the application. There follows what has been described to us as an “iterative process” whereby: (i) the NRC staff evaluates the application and notifies the applicant of deficiencies, (ii) the applicant revises the application to address the staff’s concerns, (iii) intervenors try to keep pace and file motions to amend their petitions based on the revised application, (iv) the staff continues its review and identifies deficiencies, (v) the applicant revises its application, (vi) intervenors seek leave to amend, etc. All the while, the staff is also preparing the SER and EIS that ultimately will be the staff’s final position on the safety and environmental adequacy of the application.

Members of the public must file a petition to intervene within 60 days of the docketing of an application (or risk forfeiting the right to intervene) and must do so on an incomplete and evolving record. This leads intervenors to file voluminous contentions; many are speculative, and others likely could have been addressed in the ordinary course of the staff’s review. Simply put, faced with an early deadline to file contentions on an incomplete record, intervenors wildly over-file. This puts strain on the NRC staff, sets the staff and intervenors in an adversarial posture from the get-go, reduces the quality of public participation, burdens the Licensing Board, and risks delaying and undermining the entire licensing process.

Benefits of extending the contention filing deadline

Louis Kaplow has written about the value of accuracy in adjudications, including in the licensing context.¹¹⁷ The benefits are realized in several ways, including better distribution of resources, overall social welfare, and efficient behaviors caused by changed incentives.¹¹⁸ Lawrence Solum argues that increased accuracy of information leads to increased participation, and an enhanced sense procedure fairness.¹¹⁹

Extending the contention deadline can also enhance procedural justice in the contested hearing process.

¹¹⁶ The NRC’s existing process does not include development of a “draft” SER but we understand that the process could be modified to include something like a “draft” or “preliminary” SER that could function like a draft EIS.

¹¹⁷ Louis Kaplow, *The Value of Accuracy in Adjudication: An Economic Analysis*, 23 J. LEGAL STUD. 307 (1994).

¹¹⁸ *Id.* at 338-45.

¹¹⁹ Lawrence B. Solum, *Procedural Justice*, 78 S. CAL. L. REV. 181, 192–224 (2004).

Applying these principles here, the potential benefits of extending the contention deadline are considerable. First, the clarity of a complete and accurate record should lead to fewer, more accurate contentions. Because intervenors will have the complete application and staff reports, they will be able to allege with particularity any flaws they believe remain in the application. Claims will be sharpened to address actual issues in the record, avoiding the shotgun, speculative contentions that infect the current process. Indeed, the applicant has significant incentive to fully address the intervenors' concerns (identified in the early engagement process, see Recommendation 2) and to present as complete and accurate an application as possible, in order to reduce the likelihood of admissible contentions. The ultimate effect is that: intervenors are invited to participate on a complete, accurate record; contentions are more focused and fewer; staff is relieved of the obligation to evaluate and respond to petitions, amended petitions, and further amended petitions while completing the SER and EIS; the deeply embedded adversarial nature of the current process is substantially alleviated; and applicants get a quicker, more efficient hearing on their application. The interests of public participation, procedural justice, and efficiency can all be served.

Potential drawbacks

A potential source of added administrative cost and delay could come from intervenors filing "eleventh-hour" contentions that raise previously unconsidered issues that must be evaluated and addressed by the NRC staff and the applicant. This risk would be significantly offset by barring intervenors from asserting challenges on issues that were not identified during the early public engagement process, as discussed in Recommendation 2. Nonetheless, the possibility remains that an issue might arise in the final application intervenors could not reasonably have foreseen at the early engagement stage.

Summary table of expected benefits and potential drawbacks

Potential benefits	Potential drawbacks
More efficient—no duplication of effort between intervenors and the NRC staff	Possible delay and added costs in some cases
Fewer, more directed contentions	Risks contentions being filed late in the process that the applicant did not expect
Allows more accurate contentions (that are based on a complete picture)	
Increases trust	

Recommendation 4. Continue to require that contested hearings be conducted in-person, on a live record, whenever practicable.

We recommend retaining the opportunity for admitted contentions to have an oral hearing in front of the ASLBP, rather than moving to an entirely written process.¹²⁰ While oral hearings might add time and cost to the application process, we believe this is more than outweighed by gains in procedural fairness and the perception of just outcomes that flow from live hearings. We heard from one intervenor that it was important to have an in-person hearing, rather than a phone hearing, because the physical hearing allowed members of the community to come together to take part in the process in a way that feels more meaningful than attending a hearing over the phone.¹²¹

The value that comes from allowing live participation speaks to a key interest of intervenors, which is a desire to feel like they are part of the process and that their contentions are considered seriously. It also allows for a fuller consideration of the issues raised, since ambiguities can be clarified and the presiding judges can ask questions of the different parties.

There is extensive scholarship on the value of direct interaction in dispute systems. For example, Joel Eisen notes that face-to-face conversation can “foster important process values” in the field of mediation.¹²² In the adjudicatory context, there are questions of due process that arise through reaching decisions without affording the parties the opportunity to be heard.¹²³ Oral hearings are also important to give the public a meaningful voice, one of Lind and Ardt’s criteria for perceptions of fairness.

Summary table of expected benefits and potential drawbacks

Potential benefits	Potential drawbacks
Fulfills NRC’s mission	Time/cost
Provides focal point for the NRC staff’s work	Potentially challenging for public to attend since reactors are often in remote locations
Provides a forum for community engagement and opportunity to be heard	
Rigorously tests application’s readiness	

¹²⁰ We refer here to the final contested hearing. Preliminary, non-substantive issues could be heard over the phone or over video link to increase efficiencies.

¹²¹ The current moment may be ripe for an analysis of whether platforms such as Zoom could be an adequate substitute for in-person hearings, particularly when the situs of a proposed plant is in a remote location. This was, however, outside the scope of our report.

¹²² Joel B. Eisen, *Are We Ready for Mediation in Cyberspace?*, 1998 BYU L. REV. 1305, 1308 (1998).

¹²³ We do not mean to imply that there are potential due process violations that could arise from denying oral hearings on contestations, but rather to illustrate the value given to such opportunities by our country as a whole.

Recommendation 5. Institute or enforce NRC deadlines for issuing decisions in contested hearings.

We recommend that the NRC institute internal deadlines for stages of the contested hearing process that do not currently incorporate deadlines. Where internal deadlines already exist, such as the time for the ASLBP or Commission to issue decisions on the matters before them, we recommend adhering more strictly to them, and only filing for extensions in unusual circumstances.

This recommendation may strike some as not serving much point, and it may seem to be challenging to enforce, given that the highest levels of the NRC would be tasked with policing themselves. Nevertheless, we believe it is worth exploring how to implement these deadlines, for several reasons. Adhering to these internal deadlines is a low-cost way to make contested hearings more time-efficient. By acknowledging these time constraints, the NRC can create clear expectations about how long the typical contested process will take. Moreover, the NRC can prevent instances where the process drags on for too long, undermining the Agency's regulatory mission. This also touches on the second of Lind and Ardt's three factors, respect.¹²⁴ They write about the importance of respectful treatment to achieving effective regulatory interactions. This is largely due to the perception of fairness that is impacted by respect or a lack thereof. Such impact has been well documented: for example, a study of US courts found that feelings of being treated respectfully strongly influenced how litigants viewed the fairness of the judgment they received.¹²⁵

Having clearly defined timelines for the NRC's role in a contested hearing would help the parties feel that they are being treated respectfully. One complaint we heard repeatedly was the feeling that there were unnecessary internal delays with deciding contentions, and no clear reasons for the delay, which caused consternation among both intervenors and applicants. We heard from several stakeholders about the contentions over the Diablo Canyon site, which were finally concluded in 2015 after a long period of litigation. Enforcing internal deadlines will help to alleviate these resentments.

Enforcing deadlines for issuing ASLBP rulings or Commission decisions may not be practicable. Nonetheless it is important to continue valuing a culture in which these deadlines viewed as an integral part of serving the public – applicants, intervenors and the general public. We suggest that the NRC considering a new Commission Policy Statement on the importance of a timely contested hearing process and the role deadlines play in that.

¹²⁴ Lind & Ardt, *supra* note 70, at 23.

¹²⁵ E. Allan Lind et al., *In the Eye of the Beholder: Tort Litigants' Evaluations of their Experiences in the Civil Justice System*, 24 L. & SOC. REV. 953 (1990).

Summary table of expected benefits and potential drawbacks

Potential benefits	Potential drawbacks
Shortens the process	Added pressure on the decision maker
Adds predictability	Difficult to implement/enforce

CONCLUSION

A contested hearing is, by definition, adversarial. There are interests on both sides that stand in disagreement to one another. This is certainly true of any process the NRC chooses to implement for licensing advanced reactors, especially given some of the deeply ingrained disagreements we have highlighted. But this does not mean that the process must be designed to emphasize its adversarial nature. Rather, by encouraging consensus-building, early-stage informal intervention, and collaborative fact-finding, the process can be one in which trust is instilled in greater measure and parties feel they can come together to resolve issues. For those disputes that still must be formally adjudicated, providing clarity around the procedural rules and adhering to well-defined timelines will improve efficiency and boost perceptions of fairness. Even while striving to be efficient, allowing petitioners to see as much of the picture as possible, and maintaining the practice of in-person adjudication, will give the public an important voice in the process and will help achieve goals of procedural justice and accurate assessment of claims.

As noted, we have endeavored here to provide a series of framework ideas we believe will improve outcomes and reduce costs in a contested hearing process. Many of the details are left to be defined and will best be worked out in connection with the ongoing development of Part 53. Some of the questions that will be worth considering include whether to retain the current procedural standards for pleadings and determining standing, and how to structure of role of NRC staff members as, in effect, interested parties in adjudications. We believe that this framework will help guide some of those details and allow for a process that reduces costs and allows the best ideas to come forward, for the good of the industry as a whole.

APPENDIX A

BALANCING REGULATORY RULES AND STATUTORY BURDENS: THE CASE OF INTERVENOR FUNDING

One of the elements that complicates the ability to implement a maximally efficient design for a “Part 53” contested hearing process is the complex interplay between the NRC’s regulatory rules, as listed in Title 10 of the Code of Federal Regulations, and the NRC’s governing statutes. Included among these statutes are the Atomic Energy Act of 1954, the “organic statute” which created the precursor to the NRC, as well as the National Environmental Protection Act of 1969, the Energy Reorganization Act of 1974, and the Nuclear Energy Innovation and Modernization Act of 2019. All of these statutes contain limits, or impose requirements, on what the NRC does. For example, NEPA requires that the NRC have a public comment period to evaluate the environmental impact of major federal actions significantly affecting the human environment, such as the licensing of a large LWR. This requirement means that we cannot recommend preempting the public comment for the ability to file contentions on environmental issues, because there is no practicable way for the NRC to implement such a change.

A particularly stark example of this is the consideration of intervenor funding. One of the desires expressed universally by private intervenor groups is for the NRC to provide some sort of funding for their activities. Intervenors tend to be non-profit organizations or individuals with limited resources, who are involved in filing contentions out of a feeling of responsibility to engage in this service for the public good. Most of them do not have the ability, therefore, to hire an expert to review the extensive documents that form the application record, or to retain them over time to weigh in on new developments.

There is a fair amount of literature on intervenor funding, much of it positive.¹²⁶ It is seen as a way to ensure participation, providing a valuable check on regulatory oversight and outsourcing some of the work of ensuring public safety. For these reasons, several states offer funding for members of the public who intervene in energy siting in good faith, including California¹²⁷ and New York.¹²⁸

However, we did not consider this issue or weigh the opposing sides in the body of this Report, because the point is rendered moot by statute. Specifically, the congressional funding bill for fiscal year 1993 reorganized the NRC’s budget and prohibited the funding of intervenor

¹²⁶ See, e.g., Michael I. Jeffery, *Intervenor Funding as the Key to Effective Citizen Participation in Environmental Decision-Making: Putting the People Back into the Picture*, 19 ARIZ. J. INT’L & COMP. L. 643 (2002).

¹²⁷ *The Intervenor Compensation Program*, CPUC, <https://www.cpuc.ca.gov/icomp/>.

¹²⁸ *The Fund for Municipal and Local Parties: A Guide to Intervenor Funding Pursuant to Article 10 of the Public Service Law*, N.Y. DPS, [https://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/6fd11ce8db088a2785257e200054a99b/\\$FILE/Guide%20to%20Intervenor%20Funding%201-30-18.pdf](https://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/6fd11ce8db088a2785257e200054a99b/$FILE/Guide%20to%20Intervenor%20Funding%201-30-18.pdf).

activities.¹²⁹ As such, any changes to the Agency's approach to this question would require an Act of Congress.¹³⁰

This does not mean that there is no role for the NRC to play when dealing with superseding requirements. Rather, there is great value in staff members understanding these hierarchical structures and being able to communicate them clearly to the public. This is a piece of what we encourage (Recommendation 1.a), and it will help alleviate perceptions of unfairness and bias directed at the NRC itself, as well allowing the public to understand that issues such as this are best brought up to parties other than the Agency.

¹²⁹ Pub. L. No. 102-377 § 502 (1992).

¹³⁰ See 69 Fed. Reg. 2190 (Jan. 14, 2004).

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From: Tim Judson
Sent: Friday, March 4, 2022 1:34 PM
To: Consent Based Siting
CC: Jesse Deerinwater
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: NRW-Comment_DOE-Consent-Based-Siting-RFI.pdf

Dear Dept. of Energy Representative:

Please accept the attached comments on behalf of the National Radioactive Waste Coalition and seventeen additional organizations, in the docket # DOE-HQ-2021-0032, Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Fed. Reg. 68,244 (Dec. 1, 2021).

Sincerely,

Jesse DeerInWater
Community Organizer
Citizens Resistance at Fermi 2 (CRAFT)

Timothy Judson
Executive Director
Nuclear Information and Resource Service

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

March 4, 2022

Office of Spent Fuel and Waste Disposition
Office of Nuclear Energy
U.S. Department of Energy
consentbasedsiting@hq.doe.gov

RE: Docket # DOE-HQ-2021-0032 Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Fed. Reg. 68,244 (Dec. 1, 2021)

The National Radioactive Waste Coalition and the seventeen below-listed organizations submit the following comments in response to the U.S. Department of Energy's (DOE) request for information (RFI) in the above-referenced docket. We decline to comment on the specific areas of inquiry listed in the RFI. DOE has failed to analyze or respond to comments and information most of our member organizations already provided to DOE in two previous public comment proceedings, referenced in the RFI and which included substantively the same topics. Unless and until DOE clarifies what additional information it requires on the topics listed, beyond or supplemental to that which NRWC members and thousands of members of the public have already provided, we decline to reiterate or elaborate upon our previous comments.

The NRWC wishes to comment upon the RFI itself and DOE's intent, stated therein, to pursue consolidated interim storage (CIS). DOE has thoroughly misstated its statutory mandate to pursue a federal CIS program. The agency appears either to be operating under a misapprehension of its authority, or to be misleading the public in order to win their acquiescence to the siting of CIS facilities. Both possibilities are troubling.

DOE's persistence in promoting consent-based siting is disingenuous, at best. The agency's now-repeated exercises in developing a consent-based siting program are a distraction from the failures of the nuclear waste management program and nuclear waste policy. We note that DOE issued the current RFI after a number of developments in 2021 that demonstrated a need for nuclear waste policy reforms: an April 2021 report by the Nuclear Waste Technical Review Board (NWTRB), which made extensive recommendations on how DOE could advance the nuclear waste program within the constraints of current policy¹; a June 15, 2021 Senate budget hearing in which Senators pressed Secretary Granholm to move the nuclear waste program forward²; and the publication of a September 2021 report by the Government Accountability Office, which noted the need for statutory reforms by Congress.³ Both the NWTRB and GAO

¹ <https://www.nwtrb.gov/docs/default-source/reports/nwtrb-six-recommendations-report.pdf?sfvrsn=20>

² <https://www.energy.senate.gov/hearings/2021/6/full-committee-hearing-to-examine-the-president-s-fy-2022-budget-request-for-the-department-of-energy>

³ <https://www.gao.gov/assets/gao-21-603.pdf>

noted that DOE would have to begin a new process for public engagement, after recruiting “appropriate people with social science, communication, and technical skills to work with the public.” DOE’s initiation of the consent-based siting RFI appears to be a mere continuation of the agency’s previous counterproductive activities, meant to “check the box” on GAO’s suggestion that DOE finalize the draft consent-based siting recommendations without addressing the long-standing problems with the agency’s public engagement practices identified by the GAO, NWTRB, and the Blue Ribbon Commission on America’s Nuclear Future (BRC).

When first proposed by the BRC in 2012, the notion of consent-based siting was intended to be but one part of a wholesale reform of nuclear waste policy, which also included: restarting the repository program; and removing DOE as the agency responsible for implementing nuclear waste policy.⁴ DOE has conveniently ignored most of the BRC’s recommendations, especially those which called into question the agency’s competency and credibility to implement the nuclear waste program.

As the NRWC detailed in a December 2021 letter to Congressmembers, President Biden, and Secretary Granholm, the BRC’s recommendations, taken on the whole, would not have produced a responsible, effective, equitable, and just nuclear waste policy, and are no longer relevant.⁵ In recent years, DOE has attempted to justify its continued misdirection of the nuclear waste program by selectively referencing the BRC and cherry-picking from its recommendations, thereby reinforcing the public’s distrust of the agency’s intentions. The BRC highlighted the lack of confidence in DOE among many stakeholders as fatal to the agency’s ability to execute the reforms needed to manage the nation’s inventory of nuclear waste. DOE’s continued pursuit of CIS, despite its lack of statutory authority to do so, and in dereliction of its actual duties and responsibilities under the Nuclear Waste Policy Act, only reinforces the view among communities impacted by and targeted for nuclear waste that DOE cannot be trusted.

The failures of several proposed nuclear waste facilities by both DOE and private-sector entities have demonstrated the efficacy of state and local community opposition in overcoming statutory mandates and political and economic coercion, by exercising their constitutionally-protected rights and procedures under the federalist division of powers. DOE nevertheless appears to view the rubric of “consent-based siting” as a new vehicle for the same strategy it pursued in the 1990s through the Office of the Nuclear Waste Negotiator (ONWN).⁶ The office provided grants as financial inducements to engage Native American tribal governments in negotiations over siting CIS facilities⁷ on their territories. The effort failed and the ONWN was disbanded in 1995;

⁴ https://www.energy.gov/sites/default/files/2013/04/f0/brc_finalreport_jan2012.pdf

⁵ <https://www.nirs.org/wp-content/uploads/2022/03/NRWC-BRC-Letter-2021-12.pdf>

⁶

<https://www.nirs.org/wp-content/uploads/radwaste/scullvalley/historynativecommunitiesnuclearwaste06142005.pdf>

⁷ Under the Nuclear Waste Policy Amendments Act of 1987, centralized interim storage was referred to by an earlier moniker: monitored, retrievable storage, or MRS. The practices referred to by CIS and MRS are

private-sector CIS initiatives which attempted to harvest the poisoned fruits of its negotiations also failed. Nevertheless, DOE's rhetoric in the current RFI suggests that "consent-based siting" will entail similar offers of money to state, local, and tribal governments to engage with DOE:

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites? (DOE-HQ-2021-0032, Area 1, Question 3)

If not through grants of money, what "benefits or opportunities" does DOE imagine providing to "local, State, and Tribal governments" to encourage their engagement in siting CIS facilities?

DOE must accept that it has no statutory authority to pursue the siting of federal CIS facilities. The Nuclear Waste Policy Act, as amended in 1987, is still the controlling statute defining DOE's duties, responsibilities, and authorities for managing the nuclear waste program. It explicitly prohibits DOE from accepting title to waste and establishing CIS facilities until a permanent repository is in operation.

Contrary to DOE's assertion in the December 1, 2021 federal register notice, the Consolidated Appropriations Act of 2021 (CAA) does not authorize DOE to pursue CIS.⁸ The CAA specifically provides funding for DOE to "conduct an advanced fuel cycle research, development, demonstration, and commercial application program," with the following goals:

- to improve fuel cycle performance
- minimize environmental and public health and safety impacts
- support a variety of options for used nuclear fuel storage, use, and disposal

CIS is listed as one among eight possible research topics for the Used Nuclear Fuel Research, Development, Demonstration, and Commercial Application program:

"(A) dry cask storage;
"(B) consolidated interim storage;
"(C) deep geological storage and disposal, including mined repository, and other technologies;
"(D) used nuclear fuel transportation;
"(E) integrated waste management systems;
"(F) vitrification;
"(G) fuel recycling and transmutation technologies, including advanced reprocessing technologies such as electrochemical and molten salt technologies, and advanced redox extraction technologies;

the same: "interim" storage facilities for commercial irradiated nuclear fuel assemblies packaged in dry-casks; shipped from reactor sites around the country to a limited number of storage facilities (typically, one or two, at any given time); with the casks stored at grade level.

⁸ <https://www.congress.gov/bill/116th-congress/house-bill/133/text>

*“(H) advanced materials to be used in subparagraphs (A) through (G); and
“(I) other areas as determined by the Secretary.”*

Funding for a RD&D and commercial application program is far from authorizing DOE to undertake a federal CIS program, in contravention of the NWPA’s express prohibition. If the CAA had done so, as DOE avers in the RFI, the GAO would certainly have noted it. Instead, GAO found that Congress would need to enact legislation authorizing DOE to undertake a federal CIS program.

The rationale for the NWPA prohibition on federal CIS remains as valid as ever. The goals of the NWPA are to ensure the safe and secure, long-term isolation of nuclear waste from the environment and to prevent proliferation of fissile materials. Without an operating permanent repository, any supposedly “interim” centralized storage facility could easily become a *de facto* permanent site. Waste could remain in facilities that are not environmentally unqualified to secure it for indefinite periods of time that would result from failure to open a permanent repository. Even the BRC, which favored removing the NWPA’s “linkage” between a federal CIS and an operating repository, only recommended doing so *in conjunction with* restarting the repository program and removing the current logjam created by the designation of the unsuitable Yucca Mountain project. The BRC recognized the intent of the existing law, in fact, by listing the recommendation to restart the repository program *prior to* initiation of a federal CIS program.

DOE’s issuance of the RFI is also disconnected from present-day circumstances, of which the agency is most certainly aware. Two CIS facilities are already very far along in the process of being sited today: Interim Storage Partners (ISP) and Holtec have both submitted license applications to the Nuclear Regulatory Commission (NRC) for CIS facilities which would be located, respectively, in Texas and New Mexico. The Nuclear Regulatory Commission (NRC) issued a license to ISP in mid-2021, and is expected to complete its review of Holtec’s application in 2022. Legal appeals have already been filed against both applications, and the challenge to ISP’s application is now moving through the judicial process.⁹

These matters directly implicate DOE’s role in implementing CIS. Both ISP and Holtec stated in their license applications that they do not intend to operate the facilities except as contractors to DOE—i.e., that the agency would pay for the cost of transporting and storing the waste in the CIS facilities. This would, presumably, depend on DOE taking title to commercial irradiated fuel and contracting with ISP and/or Holtec to manage it at their respective facility(s). Since that is presently illegal under the Nuclear Waste Policy Act unless and until either a permanent repository is in operation or Congress changes the law, suits against each of the licenses include challenging NRC’s authority to license facilities whose operations are contingent on a

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<http://archive.beyondnuclear.org/centralized-storage/2022/2/7/updates-on-various-federal-appeals-court-cases-opposing-cisf.html>

circumstance that is not currently legal. It is unclear whether ISP and/or Holtec has already entered into discussions with DOE about implementing such arrangements. However, it would be negligent of them to expend the significant time and cost of applying to license facilities whose operation is contingent on winning contracts from DOE without ensuring the facilities would meet the agency's requirements.

DOE must be transparent about its intentions with respect to the siting of these proposed privately owned and operated CIS facilities. Both sites face well-grounded claims of environmental injustice, due to their location in majority-Hispanic communities that are already burdened with multiple polluting facilities, industrial activities, and extractive industries. Neither facility can be said to have consent, with both vocal opposition in the host communities/areas and expressions of opposition from key elected officials. Each site is opposed by the governor of the respective state: Governor Greg Abbott of Texas¹⁰; and Governor Michelle Lujan Grisham of New Mexico.¹¹ In 2021, the Texas legislature enacted HB7, prohibiting the operation of a CIS facility within the state's borders.¹² New Mexico's legislature has considered a similar bill in 2022. Also, in 2021, the Commissioners' Court of Andrews County, Texas, where the ISP facility would be located, passed a resolution opposing CIS.¹³

Should NRC licenses for the ISP and/or Holtec facilities go into effect, they would not meet even the most cursory standard for consent-based siting. DOE must state whether it is truly committed to consent-based siting as a principal, and whether it would entertain contracting with ISP and/or Holtec without local consent for the operation of their respective facilities.

What is more, DOE must also clarify its intent with regard to the design of legal settlements in lawsuits for damages filed by nuclear power plant owners under the Nuclear Waste Policy Act. The future operations of both ISP and Holtec are potentially tied to the management of irradiated fuel at reactor sites owned by affiliated entities. Holtec has acquired multiple closed reactors and their irradiated fuel. ISP is controlled by Waste Control Specialists, a subsidiary of J. F. Lehman, which also owns Northstar, the lead partner in Accelerated Decommissioning Partners (ADP). Northstar owns the Vermont Yankee reactor and its irradiated fuel, and ADP has the contract to decommission the Crystal River 3 reactor and take ownership of the associated NRC license, irradiated fuel, and independent spent fuel storage installation (ISFSI). Holtec and

¹⁰

<http://static1.1.sqspcdn.com/static/f/356082/28353879/1601564727967/9+30+20+TX+Governor+Abbott+opposition+letter+against+both+CISFs.pdf?token=myIdOYcNR%2FIJGt%2Bk0FVqPJSrns%3D>

¹¹

<http://static1.1.sqspcdn.com/static/f/356082/28330773/1596120083697/7+28+20+NEW+MEXICO+GOVERNOR+LUTR+TO+PRESIDENT+TRUMP+2020-1.pdf?token=XtMQtyJ7wOeF%2BvbODUWxk2dBznc%3D>

¹² <https://capitol.texas.gov/BillLookup/History.aspx?LegSess=872&Bill=HB7>

¹³

<https://www.co.andrews.tx.us/DocumentCenter/View/714/Resolution-Opposing-High-Level-Nuclear-Waste-7-30-2021?bidId=>

Northstar/ADP are actively seeking to acquire more decommissioning reactors and their irradiated fuel.

As the owners and licensees of nuclear reactors, their irradiated fuel, and the standard contracts with DOE for disposition of the fuel, ISP's affiliates and Holtec have the right to sue DOE for breach of contract and to recoup the cost of their continued management of irradiated fuel. In such suits, it has become standard practice for DOE to enter into settlements with the reactor owners to pay most or all of such damages. It is possible that Northstar/ADP and Holtec will propose settlements to DOE that would cover the cost of relocating the waste from their decommissioning reactor sites and storing it at their affiliated CIS facilities. If DOE were to enter into such settlements, it would effectively implement a federally-funded CIS program, through an end run around the plain intent of the NWPA. And because the ISP and Holtec facilities do not enjoy the consent of host states and communities, it would not comply with the criteria of consent-based siting on which DOE says it intends to base a federal CIS program.

DOE's silence on these questions in the RFI and its prior consent-based siting activities is glaring. DOE owes it to the targeted communities, the broader public, and Congress to state whether it would consider entering into such settlements, and whether consent of states and impacted communities to the siting of CIS facilities would have to be met. We further encourage DOE to acknowledge the extensive failures of the nuclear waste management program and the need for extensive policy reform, and we invite DOE to embrace the Guiding Principles for Humane and Equitable Nuclear Waste Policy as the basis for legislation, regulations, and programs going forward.¹⁴

Sincerely,

Jesse DeerInWater
Community Organizer
Citizens Resistance at Fermi 2 (CRAFT)



Timothy Judson
Executive Director
Nuclear Information and Resource Service



On behalf of the National Radioactive Waste Coalition (listed below, after other signatories).

¹⁴

<https://www.nirs.org/wp-content/uploads/2022/03/NRWC-Guiding-Principles-Letter-2021-05-06-FINAL.pdf>

Linda Seeley, Secretary
Biodiversity First!
Los Osos, CA

Jane Williams
California Communities Against Toxics
Rosamond, CA

Robert M. Gould, MD
San Francisco Bay Physicians for Social
Responsibility
San Francisco, CA

Maureen Headington
Stand Up/Save Lives Campaign
Burr Ridge, IL

Michael J. Keegan
Coalition for a Nuclear Free Great Lakes
Monroe, MI

Alice Hirt
Don't Waste Michigan
Holland, MI

Eleanore Ablan-Owen
Interfaith Council for Peace & Justice
Ann Arbor, MI

Rita Mitchell
Washtenaw350
Ann Arbor, MI

David McCoy, JD.
Citizen Action New Mexico
Albuquerque, NM

Sidney Hughs
Northeastern New Mexicans United Against
Nuclear Waste
Nara Visa, NM

Susan Shapiro
LEAF of Hudson Valley, LLC
Goshen, NY

Rio Hito
Promoting Health and Sustainable Energy
Nanuet, NY

Patricia Marida
Ohio Nuclear Free Network
Toledo, OH

David Hughes
Citizen Power, Inc.
Pittsburgh, PA

Mavis Belisle
Dallas Peace and Justice Network
Dallas, TX

Lon Burnam
Peace Farm
Dallas, TX

Pamela Richard
Peace Action WI
Milwaukee, WI

Members of the National Radioactive Waste Coalition:
Alliance for Environmental Strategies (Eunice, NM)

Blue Ridge Environmental Defense League (Knoxville, TN)
Cape Downwinders (Harwich, MA)
Chesapeake Physicians for Social Responsibility (Baltimore, MD)
Citizens Action Coalition (Indianapolis, IN)
Citizens Awareness Network (Shelburne Falls, MA)
Citizens' Environmental Coalition (Albany, NY)
Citizens Resistance at Fermi Two (Redford, MI)
Concerned Citizens for Nuclear Safety (Santa Fe, NM)
Council on Intelligent Energy & Conservation Policy (Scarsdale, NY)
Fairewinds Energy Education Nonprofit (Charleston, SC)
Georgia Women's Action for New Directions (Atlanta, GA)
Green State Solutions (Iowa City, IA)
Greenaction for Health and Environmental Justice (San Francisco, CA)
Healthy Environment Alliance of Utah (Salt Lake City, UT)
Heart of America Northwest (Seattle, WA)
Hudson River Sloop Clearwater, Inc. (Beacon, NY)
Indian Point Safe Energy Coalition (Cortlandt Manor, NY)
Manhattan Project for a Nuclear-Free World (New York, NY)
Multicultural Alliance for a Safe Environment (Albuquerque, NM)
Native Community Action Council (Las Vegas, NV)
Nevada Nuclear Waste Task Force (Las Vegas, NV)
North American Water Office (Lake Elmo, MN)
Nuclear Energy Information Service (Chicago, IL)
Nuclear Information and Resource Service (Takoma Park, MD)
Nuclear Issues Study Group (Albuquerque, NM)
Nuclear Watch New Mexico (Santa Fe, NM)
Nuclear Watch South (Atlanta, GA)
Nukewatch (Luck, WI)
Occupy Bergen County (Woodcliff Lake, NJ)
Physicians for Social Responsibility-Los Angeles (Los Angeles, CA)
Safe Energy Rights Group (NY)
Samuel Lawrence Foundation (Del Mar, CA)
San Clemente Green (San Clemente, CA)
San Luis Obispo Mothers for Peace (San Luis Obispo, CA)
Shut Down Indian Point Now (New York, NY)
Snake River Alliance (Boise, ID)
Southwest Research and Information Center (Albuquerque, NM)
Stop the Algonquin Pipeline Expansion (Rye, NY)
Sustainable Energy & Economic Development Coalition (Austin, TX)

Uranium Watch (Monticello, UT)

Vermont Yankee Decommissioning Alliance (Plainfield, VT)

Women Changing the World (Atlanta, GA)

Women's Energy Matters (Fairfax, CA)

From: Fred Dilger
Sent: Thursday, February 24, 2022 12:38 PM
To: Consent Based Siting
Subject: [EXTERNAL] FW: RFI: Consent-Based Siting and Federal Interim Storage
Attachments: State of Nevada DOE RFI comments.pdf

Fred C. Dilger PhD.

Executive Director
Nevada Agency for Nuclear Projects

[REDACTED]
[REDACTED]

From: Fred Dilger
Sent: Thursday, February 24, 2022 12:37 PM
To: consentbassedsiting@hq.doe.gov
Cc: Kevin Benson <[REDACTED]>; Dan P. Nubel <D[REDACTED]>; Fritchley, Sandra <[REDACTED]>; k[REDACTED]; Peard, Bowen <B[REDACTED]>; k[REDACTED] Lokken, Sean (Cortez Mastro) <[REDACTED]>; Kelly Riddle (K[REDACTED]v) <[REDACTED]>; [REDACTED]
Subject: RFI: Consent-Based Siting and Federal Interim Storage

Hello,

Attached are the State of Nevada's comments on the DOE's Request for Information on Using a Consent-Based Siting Process to identify Federal Interim Storage Facilities

Thanks

Fred C. Dilger PhD.

Executive Director
Nevada Agency for Nuclear Projects

[REDACTED]
[REDACTED]

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OFFICE OF THE GOVERNOR
AGENCY FOR NUCLEAR PROJECTS

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Carson City, NV 89706-7954
Telephone (775) 687-3744 • Fax (775) 687-5277
E-mail: nwpo@anp.nv.gov

February 23, 2022

Dr. Kim Petry,
Acting Deputy Assistant Secretary for Spent Fuel and Waste Disposition
U.S. Department of Energy
1000 Independence Avenue S.W.
Washington DC 20585

Dear Dr. Petry:

This letter is in response the Department of Energy's Notice of request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, dated November 30th, 2021.

Nevada supports the idea of consent-based siting for both interim storage and repositories consistent with an integrated nuclear waste management plan. Governor Steve Sisolak has clearly stated that Nevada will not consent to disposal of commercial or defense spent nuclear fuel and high-level radioactive waste in Nevada, whether combined or disposed separately.

The United States has struggled with the problem of disposing of spent nuclear fuel (SNF) and high-level radioactive waste (HLW) for decades. The problem first gained urgency in the 1950s. The National Academy of Sciences (NAS) recommended geologic disposal in 1957 and further recommended prompt development of an HLW repository in 1966. After five years of site-specific studies, in 1970 the U.S. Atomic Energy Commission (AEC) proposed construction of the first repository in a salt formation near Lyons, Kansas. Kansas political leaders initially took a wait-and-see attitude. The Kansas State Geological Survey soon found evidence that the site was technically flawed and requested a delay in final site selection. The AEC refused to back down, even after compelling evidence of unsuitability emerged in 1971. The Kansas congressional delegation, including former U.S. Senator Bob Dole, then intervened to legislatively restrict AEC site activities and land acquisition, and cut the AEC budget. The AEC was forced to abandon the Kansas site selection in 1972. "The commission's botched effort in Kansas had long-term repercussions. It spawned public distrust of the federal government's ability to select a safe means of disposing of radioactive waste, diminished states' receptivity to hosting a federal waste repository, and helped fuel the anti-nuclear political groundswell of the early 1970s."¹

¹ Richard B. Stewart and Jane B. Stewart, Fuel Cycle to Nowhere: U.S. Law and Policy on Nuclear Waste, Nashville, TN: Vanderbilt University Press (2011)

During the past fifty years, the federal government's approach to repository siting has been to find a location that was either acceptable technically or could receive enough votes in Congress. The United States has made two efforts to designate a site for repository development – Lyons, Kansas, 1965 to 1972, and Yucca Mountain, Nevada, 1987 to the present. Both have been unsuccessful for the same reason: the failure to obtain the consent of the proposed host states. The ongoing Yucca Mountain story is well-known. The failure of forced siting in Kansas is less well-known, particularly Senator Dole's proposal that the AEC adopt a siting process requiring approval by Kansas representatives appointed to a technical advisory panel. Senator Dole understood that in the United States, the need to obtain consent is a central part of siting a repository.

The first official Earth Day was observed on April 22, 1970. That week, less than ten months after the first human walked on the moon, Senator Dole opined "Compared to the problems we face in solving our environmental dilemma, a moon shot is easy." Speaking to insurance underwriters in Wichita, he continued "All it takes for a moon shot is the technology and dollars and the decision to harness them into one massive effort. In the environmental arena, political, economic, and social factors are all intermeshed. The government must become more conscious of the environmental impact of its various programs."²

Full-blown political opposition by Kansas took off after the AEC published its final environmental statement in June 1971. The AEC dismissed the State's technical concerns, expressed in detailed comments on the draft environmental statement, submitted to AEC in February 1971. The AEC confidently asserted: "The proposed facility will safely contain these wastes for the required period of time without any significant impact on the environment."³ The AEC concluded: "No significant impact on the environment resulting from either the construction or operation of the proposed repository is anticipated."⁴

Senator Dole and his colleague from Kansas, Senator James Pearson, moved quickly to impose severe restrictions on the Lyons proposal, without killing the project. In July 1971, they introduced an amendment "to preclude the Atomic Energy Commission from acquiring land for the proposed nuclear depository to be located near Lyons, Kansas." Dole explained: "The amendment would restrict the AEC from taking any action other than to proceed with the design of the project and undertake research and development until a Presidentially appointed Advisory Council has reported to Congress.... This Advisory Council will be in a position to publicly raise questions regarding the environmental and safety implications of this project and require their resolution, not only to the satisfaction of the scientific community but to the satisfaction of Federal, State and local public officials and the public at large, as well." The AEC budget request for repository design and initial construction was cut from \$21.5 million to \$4.5 million for

² "Moonshot is Easy Compared to Solving Environmental Problems," Folder 102, April 25, 1970, Digitized Press Releases, 1961-1996, Robert and Elizabeth Dole Archive and Special Collections, <https://dolearchivecollections.ku.edu/?p=collections/findingaid&id=40&q=&rootcontentid=188236#id188236>

³ AEC, Environmental Statement, Radioactive Waste Repository, Lyons, Kansas, WASH-1503 (June 1971), pages 1, <https://www.osti.gov/biblio/4686485-radioactive-waste-repository-lyons-kansas-environmental-statement>

⁴ AEC, Environmental Statement, Radioactive Waste Repository, Lyons, Kansas, WASH-1503 (June 1971), page 3, <https://www.osti.gov/biblio/4686485-radioactive-waste-repository-lyons-kansas-environmental-statement>

design and research.⁵ The Dole-Pearson amendment was included in the Atomic Energy Commission Authorization Bill approved by the Senate with a vote of 90-3.⁶

In 1982, Congress passed the Nuclear Waste Policy Act. This new effort began with an attempt by the Department of Energy (DOE) to identify technically suitable sites for two geologic repositories. When that effort failed in 1987, Congress adopted the Nuclear Waste Policy Act Amendments of 1987. This act, passed through legislative trickery as part of a massive budget reconciliation act, picked a candidate repository site (Yucca Mountain) based on political science rather than earth science, and did not require the consent of the affected state (Nevada). By so doing, the NWPA fatally compromised the repository project and the technical work done in support of the site. DOE and President Bush formally recommended the site to Congress in 2002. Nevada Governor Guinn submitted a notice of disapproval, over-ridden by a vote of both Houses of Congress in 2002. DOE submitted a license application to the U.S Nuclear Regulatory Commission (NRC) for authority to construct a repository at Yucca Mountain in 2008. The NRC began a formal licensing proceeding in 2008 but suspended it in 2011.

This program has limped along for 20 years, crippled by successful Nevada lawsuits and by Congressional unwillingness to fund a program to which Nevada would not consent, and given the failures of the Yucca Mountain site, simply could not consent to. In 2010, the Obama Administration attempted to withdraw DOE's license application for the project. The NRC vote to suspend the licensing proceeding in 2011 was overturned by court order in 2013, but the court directed the NRC to continue the licensing process only so long as Congressional appropriations were available for this purpose. Since 2011, Congress has continued to refuse funding for the repository program. Attempts by the Trump Administration to restart the repository program stalled because congressional funding support was lacking. In February 2020 President Trump announced that the Yucca Mountain repository project should be abandoned. The Biden administration has also indicated that it will not proceed with Yucca Mountain.

Both the Lyons, Kansas and Yucca Mountain, Nevada sites failed for technical reasons, but also because the Federal Government failed to obtain consent from the repository host states.

The forced siting approach taken by the United States has been unsuccessful for decades. Other nations have recognized this flaw and tried something else.

Two alternative approaches could be taken in the United States. The first alternative is to defer centralized solutions recognizing that the waste problem is a political and social problem that exceeds our current capabilities and enact legislation that will enable the waste to remain where currently it is safely stored. The second alternative is to enact comprehensive authorizing legislation that will engender a different systems approach to waste management, and a different approach to the siting of disposal facilities, and consolidated storage facilities, if needed.

⁵ "Amendment to Preclude AEC from Acquiring Land for Nuclear Waste Repository near Lyons, Kansas," Folder 258, July 20, 1971, Digitized Press Releases, 1961-1996, Robert and Elizabeth Dole Archive and Special Collections.

⁶ "AEC Amendment Passes 90-3," Folder 257, July 20, 1971, Digitized Press Releases, 1961-1996, Robert and Elizabeth Dole Archive and Special Collections.

The DOE's RFI is narrowly focused on the problems posed by locating a Federally created and managed interim storage site. However, the problems of an interim storage site are inherently connected to the problems of finding a permanent repository. Without an integrated systems approach, including a permanent disposal solution, an interim storage facility is insufficient to address the problem. It is destined to fail, and result in a justified fear that "interim" could become "permanent."

The RFI issued by the DOE in 2021, like the RFC issued by the DOE in 2017 does not address the larger problem of an integrated approach to finding a workable solution to the problem.

Nevada hopes to make a helpful contribution to furthering the policy discussion by providing answers to the questions posed by the RFI. Thank you for the opportunity to provide input on this vital issue. The State of Nevada has extensive experience in this area and hopes to help the nation move forward to create a workable disposal program.

Respectfully,

A handwritten signature in blue ink, appearing to read 'Fred C. Dilger', with a stylized flourish at the end.

Fred C. Dilger PhD.
Executive Director,
Nevada Agency for Nuclear Projects

Cc: Office of the Governor
Office of the Attorney General
Congressional Delegation
Chairman of the Nevada Commission on Nuclear Projects

Attachment

ATTACHMENT
STATE OF NEVADA AGENCY FOR NUCLEAR PROJECTS
ADDITIONAL COMMENTS ON THE NOV 30, 2021, REQUEST FOR INFORMATION
FEBRUARY 23, 2022

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

Nevada response: The Department must first define “consent” in the context of interim storage siting and explain how the achievement of “consent” can be implemented over multiple generations. Expectations about social equity and environmental justice, within potential host communities, may change substantially over a single generation (twenty to twenty-five years). A consolidated interim storage facility might operate for five generations or more. The Department’s siting process must accommodate the possibility, perhaps the probability, that a future generation might reject the first generation’s definition of “consent” based on changed expectations about social equity and environmental justice. Therefore, all stakeholders should be consulted, and there should be a staged consent process that allows consent to be withdrawn as new information arises and, to the extent possible, prevents irreversible commitments of resources and irrevocable decisions. For example, spent fuel must be stored in such a way that it can be retrieved from casks and repackaged and, if necessary, sent elsewhere.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Nevada response: Tribal, State, and local governments should have veto power over any site located within their jurisdictions and should be reimbursed for active oversight of the program.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

Nevada response: Any benefits offered localities should be insulated from the vagaries of Congressional budget cycles. The funds should be disbursed for the purpose of ensuring effective oversight of the program and independent verification of results. Most importantly, DOE has fundamental problems of trust and confidence. Over an extended period of time, “bribery” in the form of generous grants and deception will be insufficient for siting and operating nuclear waste facilities. DOE or some other organization must prove to be a dependable partner.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

Nevada response: There are three primary barriers. First, fifty years of failure by the DOE and its precursor agencies to recognize and address technical and social problems

associated with all aspects of radioactive waste management – characterization, packaging, storage, transportation, and disposal. Second, there is a need to restore trust and confidence in the DOE specifically, and DOE’s ability to accomplish large programs. For example, DOE will need to overcome the reputational damage resulting from DOE’s secret shipments of weapons grade plutonium to Nevada in 2019. Third, the absence of an integrated disposal program makes it is unlikely that an interim facility will be acceptable. Without a repository program any interim site could prove to be a de facto repository for a century or more.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

Nevada response: The primary condition for an interim storage facility is the assurance that it will not become a repository. For that to occur, it is necessary to have a functioning repository program. The DOE should work with local communities THROUGH states and tribes. This requires large reservoirs of trust on all sides. DOE has often behaved in a way that undermines that trust. When Nevada was forced to sue DOE over the 2019 secret plutonium shipment to the Nevada National Security Site, Nevada joined a litigation community including every State hosting a major DOE nuclear waste facility (Idaho, New Mexico, South Carolina, Washington). It will take a long time to establish the trust and confidence necessary. DOE must not attempt to bypass States when working with local governments.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

Nevada response: First, as stated in response to question 5, DOE or any other implementing entity must not attempt to bypass States in working with local governments. Second, DOE should engage an appropriate external agency to thoroughly evaluate past institutional relations between potential host States and DOE’s Office of Civilian Radioactive Waste Management (OCRWM), and similarly the experience of the Office of Nuclear Waste Negotiator. It is vital to understand the reasons for the failures that have led us to the current stalemate. Neither DOE nor its contractors can effectively undertake this task.

7. What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

Nevada response: We emphasize the importance of issues previously identified in response to questions 1 through 6: (1) the multi-generational nature of this program; (2) the funding mechanisms necessary to implement the program over many years; and (3)

the absence of stakeholder confidence in the DOE, described by the Secretary's own advisory panel decades ago, as an absence of public trust and confidence.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

Nevada response: The first step in removing barriers to participation is attitudinal. DOE must acknowledge that every potential host government – State, Tribe, local – will have different requirements at various times, necessary to allow meaningful participation in the siting process. The needs and expectations of the participants can be expected to evolve during the siting process, and to continually evolve as a direct result of their participation in the process. DOE must be respectful, open-minded, and flexible at every stage of siting.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

Nevada response: Potentially interested States, tribes, and local governments will need substantial financial resources – millions of dollars per year, guaranteed for several years, with minimal restrictions on allowable uses – to hire independent technical experts and legal advisers.

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

Nevada response: DOE must acknowledge at the beginning of the siting process important lessons learned from DOE's failed relationship with the State of Nevada regarding the proposed Yucca Mountain repository. The DOE must always tell the truth and be transparent in its decision-making. Host governments need to be able to access as much information as they need, essentially all information, at any time. The State of Nevada eventually learned the hard way, from emails among DOE scientists, that DOE and their contractors were manipulating data and attempting to conceal their efforts.

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

Nevada response: First, DOE acknowledge that it may be necessary to remove the program from DOE, if the Federal government is to successfully site, license, construct and operate one or more consolidated interim storage facilities and/or a geologic disposal facility or facilities. Second, if DOE is to be the managing entity, the Department must acknowledge that the lack of trust and confidence in the DOE engendered by decades of

failure will require major changes in how DOE operates during siting and going forward with development of facilities. If siting is to go forward, resulting in submission of a license application to the NRC, with consent of the affected jurisdictions, DOE may not only need to accept regulation by Federal, State, Tribal and local authorities. DOE may need to accept new, additional safety and environmental regulations. DOE will also need to ensure that stakeholder economic concerns are addressed – benefits must be guaranteed, adverse impacts must be mitigated, compensation must be provided for impacts that cannot be mitigated, and liability for accidents and incidents must be assured, perhaps requiring a waiver of defenses for actions by DOE contractors.

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Nevada response: First, DOE must acknowledge that exceptionally long timeframes are involved - a consolidated interim storage facility must operate safely for at least 40 years, and possibly a century or more; transportation would occur for 40 years to one hundred years or more; a disposal facility must operate safely for at least one million years. Meanwhile the political, legal, and economic institutions at all levels will evolve, and the needs and expectations of citizens will evolve as well. Second, DOE must acknowledge that high-level nuclear waste transportation, storage and disposal may cause substantial adverse impacts, radiological and non-radiological. It is reasonable for State, Tribal, and local governments to condition their participation in the siting process upon guarantees of meaningful access to information about impacts and risks, mitigation measures, and compensation for impacts that occur, including low-probability, high-consequence events, and so-called “perceived risks” and stigma impacts. It is reasonable for State, Tribal and local authorities to insist at the beginning of siting, that if facilities are to be constructed within their jurisdictions, there will be agreed-upon procedures requiring operations to shut down in the event of safety violations or unacceptable environmental consequences.

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation’s waste management system?

Nevada response: The State of Nevada believes it is essential to develop an integrated Waste Management System before attempting to develop a consolidated interim storage facility. The Blue-Ribbon Commission on America’s Nuclear Future recommended developing such a system ten years ago. A properly designed system would reveal if a Federal interim storage facility is even necessary.

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

Nevada response: An integrated waste management system must address transportation impacts, risks, and costs. Transportation of SNF and HLRW will be difficult, demanding a huge national effort. Optimizing the transportation system is critically important and should be considered as a part of any system development effort, with mode-specific and route-specific planning and impact assessment for all facilities included in the system.

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

Nevada response: This is the pre-eminent question asked in this RFI. Without a functioning repository program, it will be impossible and ultimately futile to obtain consent for an interim storage facility. It will be difficult, and perhaps impossible, to site an interim storage facility without a functioning repository program. Any candidates for an interim storage facility may have the waste stored in their community for more than a century. They should be aware of the fact.

4. What other issues should the Department consider in developing a waste management system?

The program for developing an integrated waste management system must be designed to take into consideration the extremely long time periods required to find a site, and then design, license, and construct a repository. Experience to date in the United States, indicates that the lead time needed for repository development will be the major driver of the entire waste system development effort.

From: Jane
Sent: Thursday, January 27, 2022 8:07 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

We absolutely do not want nuclear waste storage in our area
The ground water levels are too close to surface
We are intrinsically connected to the chain of lakes
Our income is based on tourism
It would be both an economic and environmental disaster

Sent from my iPhone

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.


From: Jane
Sent: Thursday, February 17, 2022 12:53 PM
To: Consent Based Siting; kerry dubrin; art dubrin
Subject: [EXTERNAL] Disposal site for nuclear waste

Our area is definitely NOT a viable choice for your proposed site.

We are in Lake County, Florida.
It is nothing but fresh water lakes and springs.
The water table levels are very high
We have recently experienced a tremendous spurt of growth and development. Residents rely on the purity of our ground water
Everyone is on a well if they resided here for any length of time.

An area should be chosen where there would be a minimal effect on quality of life and environmental integrity.

Thank you,

Jane du Brin


Sent from my iPhone

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

From: art dubrin
Sent: Thursday, February 17, 2022 9:07 PM
To: Consent Based Siting; art dubrin; kerry dubrin
Subject: [EXTERNAL] Re: RFI: Consent-Based Siting and Federal Interim Storage

Sent from my iPhone

On Feb 17, 2022, at 3:52 PM, Jane <[REDACTED]> wrote:

Our area is definitely NOT a viable choice for your proposed site.

We are in Lake County, Florida.

It is virtually nothing but a string of freshwater lakes and springs.

The water table levels here are consistently high.

We have recently experienced a tremendous spurt of growth in population and development. Residents rely on the purity of our groundwater!

Many have private wells for drinking purposes...

An area should be chosen where there would be a minimal effect on the quality of life and environmental integrity.

Thank you,

Jane du Brin
[REDACTED]

Sent from my iPhone

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From: Mary Duerksen
Sent: Friday, February 25, 2022 1:48 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

I am concerned that the DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

I agree with these recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Mary Duerksen



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From: Lucy Duff
Sent: Saturday, February 26, 2022 9:19 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
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7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Lucy Duff



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From: Stephen Dutschke
Sent: Friday, February 25, 2022 9:38 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

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Sincerely,
Stephen Dutschke



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From: James Eagle
Sent: Friday, February 4, 2022 2:25 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

Historically, in New Mexico, waste has typically found its way to the parts of the state having the fewest economic resources; that is, to those communities which most needed the associated jobs. It is both tragic and predictable that waste-related health problems befall lower-income communities disproportionately. In New Mexico, this means that you must listen closely to the Tribal Nations.

Right now, the debate in New Mexico is whether or not to build an interim spent nuclear fuel (SNF) storage facility in southeast New Mexico (the Holtec facility). It is sized to handle all SNF from currently operating US nuclear reactors and all SNF anticipated from future US reactors. How equitable is it for NM to house all US SNF, when it doesn't have any nuclear electrical generating facilities of its own? There is a risk mitigation argument to have multiple interim storage facilities nearer to the reactors with the SNF and not to transport all spent fuel to one location. Transportation of SNF is an important component of the overall risk for the nuclear power fuel cycle. Having multiple SNF storage facilities is a common-sense way to lower the transportation risk. And also, smaller SNF facilities can be expected to have smaller accidents.

Finally, it makes little sense to mandate a consent-based approach for federal SNF sites and not privately-operated sites!

James Eagle


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From: Maj-Britt Eagle
Sent: Wednesday, February 2, 2022 12:02 PM
To: Consent Based Siting
CC: James Eagle
Subject: [EXTERNAL] Citizen of New Mexico sends comment re consent based siting of Holtec

[REDACTED]

February 2, 2022

My husband and I have been reading in recent years the League of Women Voters old manual on the storing of radioactive waste in the idea of updating it.

Since then certain dangers to society are again becoming salient; these strongly propel me to dissuade the Nuclear Regulatory Commission and the Department of Energy from placing hot spent radioactive waste from nuclear power plants into the Holtec proposed facility in southeast New Mexico.

Currently our state superfund sites are in a state of deterioration. NEPA must be given the authority to address all things nuclear; we live within the Los Alamos Laboratory accident range, and we share a concern that our safeguards are weak while the probability of release of radiation into our air and water is strong.

Moving the highest degree of radioactive waste away from their placement in 33+ states and into the highway and rail systems of New Mexico should be pursued only if the reactor site is at excessive risk from natural events, (flooding, earthquakes, or climate change induced fires).

Communities that have hosted nuclear reactors had little to no say in their siting. We in New Mexico have said "no" to the placing of the nuclear storage site in our state, and to the transportation across less than stable highway and rail circuits within the state.

Please respect the risks we face and our right to guide the decision.

Ms. Maj-Britt Eagle
[REDACTED]

From: Elizabeth Edinger
Sent: Tuesday, November 30, 2021 6:59 PM
To: Consent Based Siting
Subject: [EXTERNAL] spent nuclear fuel

Dear Sir or Madam;

Spent nuclear fuel should not be stored on any tribal lands. It should not be stored in any community without the consent of the residents.

Sincerely,
Elizabeth Edinger

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From: Julie Eggers
Sent: Monday, February 14, 2022 1:26 AM
To: Consent Based Siting
Subject: [EXTERNAL] Re: RFI: Consent-Based Siting and Federal Interim Storage

To whom it may concern,

I am writing to voice my opposition to the proposed consolidated interim storage facilities (CISF) versus the more adequate method of hardened on-site or near-site storage (HOSS) of existing hazardous nuclear waste.

This form of interim storage is dangerous for reasons such as climate chaos, natural or man-made disasters, possible sabotage or targeting by terrorists, or accidental release of the radioactive waste leading to catastrophic harm to the environment and the health of living beings for generations to come.

Can this form of storage really be categorized as interim when no permanent geological repository has been chosen? Will this hazardous waste instead become a permanent form of storage that amounts to no more than a parking lot dump?

It is additionally problematic that these proposed storage or disposal sites are historically adjacent to where Black, Indigenous or People of Color and/or low-income communities are located. These communities are already disproportionately exposed to pollution and hazardous facilities in violation of social justice principles.

Sincerely,
Julie Eggers

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From: Rand Embertson
Sent: Friday, February 25, 2022 10:59 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
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Sincerely,
Rand Embertson



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From: rand embertson
Sent: Tuesday, March 1, 2022 8:58 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI on Consent-Based Siting

Pardon my dark attitude but your RFI makes temporarily (really?) dropping large quantities of the most deadly material on the planet look like it's something ANYBODY should accept. We KNOW this will end up in a poor neighborhood.

Any discussion of this material should START with it's deadliness to all life on earth.

Please provide what the 'possible benefits' list looks like so far.

I was shocked that the white man should be talking to Tribal governments as if we could 'benefit' them. Let's look at New Mexico for 'Tribal Benefits'.

While I understand the profound damage carbon emissions have on our possible future, any nuclear component must BEGIN with a realistic confrontation of the waste.

70 years into the atomic age, only 'temporary' (and regular failures) storage has been achieved.

But I digress, I suggest the DOE site it at: plastic and petroleum refineries, tank farms, coal mines, golf courses, and gated communities.

Perhaps a theme park.

Best wishes.

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From: I. Engle
Sent: Friday, February 25, 2022 9:13 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

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Sincerely,
I. Engle

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From: [REDACTED]
Sent: Thursday, March 3, 2022 12:30 PM
To: Consent Based Siting
Subject: [EXTERNAL] Submittal of Comments from Sustainable Fuel Cycle Task Force Science Panel
Attachments: Science Panel Response to DOE RFI-wAttchmts-Submitted 22-03-03.pdf

Dear Dr Petry,

Please include our attached comment letter into your system.

Thank you,
Lake Barrett
Science Panel Coordinator

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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Sustainable Fuel Cycle Task Force Science Panel

March 3, 2022

Dr. Kim Petry
Acting Deputy Assistant Secretary
for Spent Fuel and Waste Disposition
U.S. Department of Energy
Office of Nuclear Energy
1000 Independence Avenue, S.W.
Washington, DC 20585

Submitted via consentbasedsiting@hq.doe.gov

Subject: Science Panel of the Sustainable Fuel Cycle Task Force Response to DOE's RFI on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Fed. Reg. 68,244 (Dec. 1, 2021)

Dear Acting Deputy Assistant Secretary Petry:

On behalf of the Science Panel of the Sustainable Fuel Cycle Task Force ¹ we are pleased to provide DOE with the requested information regarding how to move forward our Nation's currently stalled nuclear waste program. As discussed more fully in the attachment to this letter, we applaud and support DOE's issuance of the Request of Information and outreach efforts to establish an integrated waste management system to support the advancement of nuclear energy to meet our nation's needs for safe clean and environmentally sound energy.

It is our opinion, that the science behind Yucca Mountain was conducted to the highest standards, has withstood countless peer reviews, and is sound such that the nearly finished licensing process should be completed. However, we also realize that within the current DOE political situation that this not possible, thus we strongly support proceeding in parallel with possible alternate approaches, such as Consent Based Siting of permanent geologic disposal facilities and integrated interim storage facilities.

The fundamental core of a nuclear waste management system, and the heart of the Nuclear Waste Policy Act, is permanent geologic disposal. Interim storage is an important positive addition, but it is only an initial receipt/storage bridge to the ultimate solution. And to be interim, DOE must have a timely parallel credible geologic disposal siting program to make it truly interim. Thus, we urge DOE to expand their consent-based program to include geologic disposal as well. We realize there are legal uncertainties that must be addressed, but we believe there are ways that this can be accomplished if DOE tries. It will be extremely difficult to convince

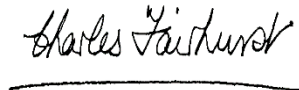
¹ The Science Panel of the Sustainable Fuel Cycle Task Force is a group of senior scientists who have worked for decades to provide a scientifically sound approach for safely managing and disposing of used nuclear fuel and high-level radioactive wastes. More information is available at our website at <http://www.sustainablefuelcyclesciencepanel.org/#/homepage>.

communities that interim storage facilities are truly temporary if there is no meaningful companion disposal program moving forward together.

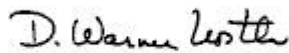
We also strongly support DOE moving forward promptly with providing funding for interested communities who may respond to the RFI and wish to learn more.

It is the collective view of our Panel that it is essential that we move forward with implementing our national integrated waste management program and leave our country a better place for future generations. Saddling our children and grandchildren with spent nuclear fuel in dozens of temporary storage locations across the country adjacent to our rivers, lakes, and seashores along with endless financial liabilities for engineered storage is irresponsible. We need to act, and the time is now.

Yours sincerely for the Science Panel,



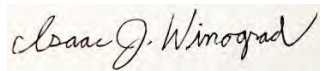
Charles Fairhurst, Ph.D.



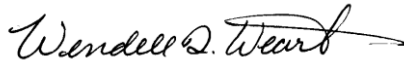
D. Warner North Ph.D.



Ruth Weiner, Ph.D.



Isaac Winograd, Ph.D.



Wendell Weart, Ph.D.



John Kessler, Ph.D.

Responses to Specific DOE RFI Questions

In addition to the below specific responses, we have also attached our July 28, 2016, responses to the DOE IPC that addresses many of the same issues that are now requested and responded to below.

Area 1: Consent-Based Siting Process

1. *How should the Department build considerations of social equity and environmental justice into a consent-based siting process?*

Reach out with honest communications, listen to the communities' concerns, and dialog with communities about how partnerships can be mutually developed to address any concerns and advance whatever interests that the communities may need and desire. Working with communities to fulfil cultural needs, power sharing arrangements, educational development, benefits, and infrastructure enhancements are all mutual opportunity areas for an effective positive host-facility relationship.

2. *What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?*

Whatever role the community structure wishes them to have in a representative democracy. DOE should listen to all points of view and adapt through dialog and discussion.

3. *What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?*

DOE should provide information on what a possible interim storage facility would technically look like in a very general sense. It should also provide suggestions of what benefits and safety and environmental protection assurances could be provided if asked by the community. Colocation of other advanced research and development safety centers, educational partnerships, land utilization, and whatever topics a community might wish to have an interest in. DOE should be prepared to discuss whatever issues a community wishes to discuss.

DOE should be prepared to assist the community in exploring new governance and ownership arrangements other than DOE. An example might be the replacement of DOE with a joint venture public service corporation that includes host communities within the governance structure.

4. *What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?*

The lack of a credible geologic disposal program to eventually remove the stored radioactive materials for permanent disposal. DOE must provide a credible realistic disposal program that meaningfully proceeds in parallel to assure the community that the interim storage is truly "interim."

The involvement of the DOE organization, which has a varied history of being a dependable partner to achieve mutual success, is a barrier. DOE should be willing to work with the community to develop a replacement DOE organization with a community desired and better functional organizational ownership/governance structure. The goal would be to jointly propose the new structure to be included in the necessary amendment to the Nuclear Waste Policy Act.

5. *How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?*

Listen to what communities want and discuss with them how their needs for assurance can be achieved. Application of commercial contracts with host communities is a sustainable approach to address community schedule expectations. Appropriate contractual conditions, with compensatory actions for failures, is a approach to ensure that commitments are achieved in a manner that is satisfactory to the community.

6. *What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?*

DOE should listen to community views regarding organizations that should be involved. Non-aligned independent organizations, such as local or regional respected academic institutions, might be the most useful and trusted by the host communities.

7. *What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?*

Please see our July 16, 2016, comments at the end of this attachment.

Area 2: Removing Barriers to Meaningful Participation

1. *What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?*

Trust concerns are likely and honest and open communications with communities to listen, explain and inform will be critical. Anti-nuclear “no solution” groups will likely wage “scare” campaigns to try to intimidate local elected officials with biased part truth information to attempt to prevent or terminate meaningful discussions. DOE needs to enhance its communications capabilities to be able to withstand unfounded emotional political attacks with accurate and timely science based information that is understandable to the public.

2. *What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?*

DOE should support reasonable requests from organizations that the community trusts and wishes to engage for independent support. This independent support should generally not be active nuclear nor anti-nuclear organizations. Such organizations may include colleges and universities, professional societies (e.g., ANS, ASME, HPS), and pragmatic environmental organizations that the community may be familiar with.

DOE should look to existing successful nuclear facility/host community relationships for guidance. Many commercial reactors have had decades of good relationship experiences with local and regional/state level hosts. It would likely be very beneficial for possible CBS interested communities to visit existing national and international nuclear facility communities to witness for themselves how positive hosting arrangements can be developed and operated.

3. *How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?*

Extensive outreach activities and financial support for interested communities to learn for themselves. Funding should be provided as soon as possible.

4. *How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?*

Emphasize possible new non-DOE partnership governance arrangements that can be adjusted to local, State and Tribal desires. DOE should leverage the range of benefits and power sharing possibilities available from the federal government to encourage State cooperation.

5. *What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?*

DOE needs to be able to explain what a general sense of the facility would be. Invite and take the community leaders, if they want, to see similar existing domestic and international nuclear facility sites. DOE should directly support communities and governments to have the ability and resources to develop their own information independently, rather than being forced to rely on federal government experts or activists alone.

Area 3: Interim Storage as Part of a Waste Management System

1. *How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?*

Listen to interested communities about their concerns and desires. This of course has a sense of the past and well as the present. Regardless of the past and present, both the DOE and community want the future to be better with respect and social equity and environmental justice. Let the community start with what they believe would be a fair just approach for taking the next steps to consider some productive fair relationship. The potential host communities are in the driver's seat and DOE need to adjust to their views of equity and justice.

2. *What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?*

This solely depends upon the dialoging communities' desires. In general, the benefits of co-location of other desired facilities are all positive for everyone. The only drawbacks could be the loss of jobs at some other existing location or the potential increase in cost to DOE or whomever the responsible owner organization is.

3. *To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?*

Likely very much. How much, is in the view of the potential host community and how they assess the likelihood of the fuel being removed at an appropriate time. And their assessment of the sufficiency and sustainability of any commitments being provided, and the reliability of the actions stated if the commitments are not met.

Any created functional CBS Interim Storage arrangement will require a revision to the Nuclear Waste Policy Act. Traditional statutory changes alone may not provide the host community with sufficient protections as there is an unfortunate history, especially with Federal-Tribal agreements, where the Federal government did not perform as promised. Thus, additional community protections, such as those provided by commercial contracts, will likely be necessary. Exactly what these are will need to be jointly developed to the eventual satisfaction of the community.

4. *What other issues should the Department consider in developing a waste management system?*

The fundamental core of a national waste management program is passive safe and environmentally protective geologic disposal. Integrated interim storage is now a valuable addition to our overall waste management program because of the unfortunate significant political delays in implementing geologic disposal. An early initial Interim Storage facility closely coupled with a relatively near-term geologic disposal facility, provides an opportunity to divide functions in an integrated manner to better accommodate community desires with national needs. For example, some classical disposal functions could be shifted to the Interim Storage facility if the host community so desires the additional economic activity. Such functions could include:

- Manufacturing and installation of the engineered waste package (which was done in Sweden)
- Transportation equipment manufacturing, maintenance, and operations
- Confirmatory science and engineering functions for transportation safety, nuclear fuels development, nuclear materials recycling, and advanced materials manufacturing technologies.

DOE, in a dialog with interested communities, should be prepared to discuss locations of DOE sponsored Office of Science activities to be colocated with an Interim Storage facility. In addition, if the interested community is in the vicinity of an existing DOE cleanup site, then DOE should be prepared to discuss modifications to existing cleanup agreements to accelerate cleanup goals, if the community so desires.



Sustainable Fuel Cycle Task Force Science Panel

July 28, 2016

U.S. Department of Energy, Office of Nuclear Energy
Response to IPC
1000 Independence Ave SW
Washington, DC 20585

The Science Panel of the Sustainable Fuel Cycle Task Force is pleased to provide its response to the U.S. Department of Energy's *Invitation for Public Comment to Inform the Design of a Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities*.

As scientists who have independently worked for many decades to support a sound approach for safely managing and disposing of our nation's used nuclear fuel and high level radioactive wastes, it is our view that the decades of extensive international scientific analyses support moving forward promptly to establish an operable geologic disposal repository. In theory, we support the proposed concepts expressed, however this should not be used as an excuse to not finish the nearly complete licensing process for the Yucca Mountain site. Thus we strongly recommend that these concepts be added as a supplement to the continuation of the Yucca Mountain licensing process rather than to replace it.

It is the collective view of our Panel that the need for progress to promptly develop a geologic repository is more critical now than ever. Used nuclear fuel accumulations at both shutdown and operating reactors continues to grow imposing significant societal burdens; disposal of defense high level radioactive waste needs are not being met; and important legal contractual obligations and state agreements are not being achieved. In addition to restarting Yucca Mountain licensing, we note the need for urgent action expressed by the Blue Ribbon Commission (BRC). The BRC did not preclude continuing Yucca Mountain licensing and we believe continuing the Yucca Mountain licensing review is the most reasonable and prudent means to address this issue with a sense of urgency. We strongly believe that the legally mandated Yucca Mountain licensing process should continue now and that the addition of proposed consent based concepts can help with Yucca Mountain and with the establishment of other future waste management facilities such as supplemental Interim Storage facilities and a potential second geologic repository as stated in the Nuclear Waste Policy Act. We urge the NRC and DOE to now be proactive and move forward with both Yucca Mountain licensing and development of consensus concepts rather than accept the unrealistic unscientific politically motivated inaction excuses of the past few years.

Detailed responses to the requested questions are attached.

Yours sincerely for the Science Panel

A handwritten signature in black ink that reads "Charles Fairhurst".

Charles Fairhurst, Ph.D. D.

A handwritten signature in black ink that reads "D. Warner North".

Warner North Ph.D.

A handwritten signature in black ink that reads "Ruth Weiner".

Ruth Weiner, Ph.D.

A handwritten signature in black ink that reads "Isaac Winograd".

Isaac Winograd, Ph.D.

A handwritten signature in black ink that reads "Wendell D. Weart".

Wendell Weart, Ph.D.

Attachment to July 28, 2016, Letter
U.S. Department of Energy, Office of Nuclear Energy,
Response to IPC

Sustainable Fuel Cycle Task Force Science Panel, Response to Invitation for Public Comment to Inform the Design of a
Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities

How can the Department ensure that the process for selecting a site is fair?

A definition of “fair” is difficult because it is a value judgement that means different things to different people. To us a “fair” process is one that is open, transparent, and defined and once established should not be altered by any party, including the federal legislative and executive branches.

What models and experience should the Department use in designing the process?

The business community affords examples with siting of industrial facilities. Agreements are made with local and state governments and confirmed by contracts.

The experience of the WIPP is relevant, as is that of other countries such as Sweden, Finland, UK, Canada, Switzerland, and Spain. All societal experiences are different and there has been considerable difficulties in successfully implementing a theoretically desirable consensus process in the real world where there are strong emotional, but often un-scientifically based fears.

Who should be involved in the process for selecting a site, and what should be their role?

Any person or group that wishes to be involved can provide their views, however the host landowner/applicant, local government, and state governments are the primary entities that should formally be consulted with. Consensus does not mean that everyone agrees because there will always likely be some group of people that will oppose any solution anywhere. All are listened to, but only the actual applicant and local and state governments are the parties that should have to agree to provide a consensus agreement.

What information and resources do you think necessary to facilitate your participation?

All information should be available to everyone. For example, the NWPALicensing Support Network (LSN) established by NRC and populated by NRC, DOE, and State of Nevada, is an example of providing all information to members of the public. DOE could establish such an LSN concept from the very beginning of site selection all the way to site closure. Hopefully a future LSN type system would be more user friendly from a computer software aspect, for simpler access by the general public. But the principles of information availability and transparency are the same.

Local governments should be provided educational grants to study options and participate. No other funds need to be paid to special interest groups.

What else should be considered?

Safety and environmental protection are provided by NRC and EPA regulations, so nothing else is needed other than a willing applicant and a working arrangement that the applicant has made with the willing local and state hosts.

Questions for Input

(1) How can the Department of Energy ensure that the process for selecting a site is fair?

Fairness is a difficult definition because siting involves tradeoffs between various aspects of an integrated waste management system. Positive aspects in one part may not be positive in another, especially when it includes emotional aspects such as “my back yard” versus “your back yard.” So whatever process DOE selects should be adhered to over time so that everyone knows the rules and the process at all times.

(2) What models and experience should the Department of Energy use in designing the process?

The creation of and implementation of the Nuclear Waste Policy Act provides considerable positive and negative experience.

Currently the main obstruction to a consensus on the Yucca Mountain repository is from the State of Nevada. The NWPA addressed the right of the host state to “disapprove” the site and that the site was terminated unless it was over-turned by positive votes by the House and Senate and President.

The Concept of Consultation and Cooperation: section 117(b) of the Act includes provisions for a Consultation and Cooperation agreement: “.... the Secretary shall consult and cooperate with the Governor and legislature of such State and the governing body of any affected Indian tribe in an effort to resolve the concerns of such State and any affected Indian tribe regarding the public health and safety, environmental, and economic impacts of any such repository.” And section 117 (c) “.... the Secretary shall seek to enter into a binding written agreement.”

Thus, the NWPA already has elements of a consensus program within it and it started out fairly well, however the truncation of sites being evaluated in 1987 made the Federal-Nevada relationship very difficult in the end. This truncation was an example of changing the process for site selection after the process had begun that undermined the federal-affected units of local government relationships.

At some point, however, a national decision has to be made and implemented and a societal decision has to be made. In our view, if the site has been found by an independent regulator, such as the NRC, to technically meet all protective safety and environmental requirements in a publicly open and transparent process, and the sponsor of the site, such as the federal government or commercial sponsor, has made a good faith effort to establish a consensus relationship with the Local and State hosts, then a State or Local government should not have an absolute veto over the facility without a reason other than “we don’t want it here”.

(3) Who should be involved in the process for selecting a site, and what is their role?

The Federal government and host landowner/applicant, local government, and state government. There is no need for others.

(4) What information and resources do you think would facilitate your participation?

Just a publicly open and transparent process is all that we would need.

(5) What else should be considered?

Implicit in the answer to each of the above questions is the assumption that the proposed disposal site is undergoing (or has undergone) a reconnaissance study and potentially meets accepted technical criteria for spent fuel disposal. That is, a fair selection process is a necessary but not a sufficient criterion for site selection.

Additionally, whatever repository is to be considered, there should be applicable EPA and NRC protection standards established well in advance so that potential hosts understand what the levels of risk are and what they are potentially agreeing to. Such scientific and legal standards already exist for Yucca Mountain, but do not exist for other potential geologic repository settings. Thus, if there is to be a meaningful consideration of other geologic settings, the EPA and NRC should establish regulatory standards very early in the process because creation of such standards takes many years.

From: Audrey Famette
Sent: Friday, March 4, 2022 12:39 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI

[REDACTED]

Social equity and environmental justice should be a top priority for “consent-based siting” of federal, so-called “consolidated interim storage facilities” (CISFs). It is Orwellian to float the offer of jobs, infrastructure development, and potential funding to BIPOC communities, low income communities, and such communities already impacted disproportionately impacted by hazardous facilities, and portray it as social equity and environmental justice advancement. BIPOC, low income, and already heavily polluted communities should not be further disproportionately impacted with CISFs for one of the most hazardous substances ever generated by human society, highly radioactive irradiated nuclear fuel.

As an important part of fully-informed consent-based siting of CISFs, DOE should clearly admit to potential host communities that “interim storage” facilities could easily become de facto permanent surface disposal, or parking lot dumps. Given that highly radioactive wastes such as irradiated nuclear fuel, remain hazardous for at least one million years (as acknowledged by the EPA in its court-ordered rewrite of its Yucca Mountain regulations, published 2008), containers and facilities will degrade and fail, unless regularly replaced. So communities targeted by DOE for federal CISFs must be fully informed that the high risks of highly radioactive wastes will persist for at least one million years, and that unless the CISFs are replaced once every one hundred years in their entirety, those radioactive hazards would be unleashed into the local environment, to blow with the wind, flow with the water, and cause harm downwind, downstream, up the food chain, and down countless generations into the future.

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From: Fettus, Geoff
Sent: Friday, March 4, 2022 12:05 PM
To: Consent Based Siting
Subject: [EXTERNAL] NRDC - RFI: Consent-Based Siting and Federal Interim Storage
Attachments: NRDC on DOE RFI CIS 4 March 2022.pdf

Dear Sir or Madam:

Please find attached NRDC's timely filed responsive comments to DOE's *Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities*, 86 Fed. Reg. 68244 (Dec. 1, 2021). The entirety of our filing is in one, 3MB pdf document, well below the 25MB limit suggested in the notice. Please let me know if you have any trouble downloading the file.

Warm regards,

Geoff Fettus
GEOFFREY FETTUS
*Senior Attorney, Nuclear
Climate and Clean Energy Program*

NATURAL RESOURCES
DEFENSE COUNCIL

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[NRDC.ORG](https://www.nrdc.org)

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March 4, 2022

Via Electronic Mail

U.S. Department of Energy
Office of Nuclear Energy
1000 Independence Ave S.W.
Washington, DC 20585
consentbasedsiting@hq.doe.gov

RE: NRDC response to RFI: Consent-Based Siting and Federal Interim Storage

Dear Sir/Madam:

The Natural Resources Defense Council (NRDC) appreciates this opportunity to submit additional comments on the U.S Department of Energy's (DOE) request for "information on how to site Federal facilities for the temporary, consolidated storage of spent nuclear fuel using a consent-based approach." *Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities*, 86 Fed. Reg. 68244 (Dec. 1, 2021) (hereinafter "RFI" or "2021 Consent Based Interim Storage RFI"). We submitted comments jointly with dozens of other regional, grassroots, and national environmental groups on February 15, 2022 (hereinafter "February 2022 Beyond Nuclear comments"). Today we provide additional responses to DOE's RFI solely on behalf of NRDC.

I. NRDC Statement of Interest

NRDC is a national non-profit membership environmental organization with offices in Washington, D.C., New York City, San Francisco, Chicago, Santa Monica, Bozeman, and Beijing. NRDC has a nationwide membership of over one million combined members and activists. NRDC's activities include maintaining and enhancing environmental quality and monitoring federal agency actions to ensure that federal statutes enacted to protect human health and the environment are fully and properly implemented. Since its inception in 1970, NRDC has sought to improve the environmental, health, and safety conditions at the nuclear facilities operated by DOE and the civil nuclear facilities licensed by the Nuclear Regulatory Commission (NRC) and their predecessor agencies, and we will continue to do so.

II. Summary of Comments

Joining many others, two weeks ago NRDC filed comments in response to this RFI. In those comments we stated that the *2021 Consent Based Interim Storage RFI* is incomplete and unclear

in its purpose, as DOE has failed thus far to do the basic work of analyzing and responding to the two rounds of public comments and multiple stakeholder meetings it held between 2015 and 2017. Affected communities have no way of knowing whether DOE agreed with their previous input on the subject of consent-based siting, or what DOE still wants to know. And with respect to the comments we filed six years ago on these and related matters, we find little reason to alter the perspective presented at that time.¹

Our perspective can be described in short order. Others will face the precise predicament of the continuing nuclear waste stalemate we find ourselves in today if DOE (and its Congressional champions) again tries to push through unworkable solutions contentiously opposed by states, lacking a sound legal and scientific foundation, and devoid of wide public acceptance and consent.² Simply put, efforts to fast track an interim storage facility will not work, lead to years of litigation, and thus derail needed efforts to find disposal sites. Unless and until Congress fundamentally revamps how nuclear waste is regulated and allows for meaningful U.S. Environmental Protection Agency (EPA) and state oversight by amending the Atomic Energy Act to remove its express exemptions of radioactive material from environmental laws – and thus providing a meaningful opportunity for consent – we’re doomed to repeat this dismal cycle until a future Congress gets it right.

So today in these comments we will present that perspective, not markedly altered by the intervening years since our last comments on the topic, except to reinforce our belief that it is past time for DOE to chart a transformational course. After a brief introduction, we will answer each question posed in the RFI as succinctly as possible. And in nearly every instance we will urge the Department to support recently introduced legislation from Senator Markey and Congressman Levin that in no immediate way changes or alters the Department’s legal position but meaningfully carries on the work of the Blue Ribbon Commission (BRC) and sets the stage for consent-based siting legislation that can finally put America on the course to solve our nuclear waste challenge. We discuss at length below.

¹ We append those comments to our filing as Attachment A (hereafter cited as “Att. A at ___”) to ensure that those views are included in the administrative record of whatever proceeding DOE has in mind for this RFI. Att. A is Natural Resources Defense Council, Inc., *Response to DOE’s Invitation for Public Comment To Inform the Design of a Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities*, July 29, 2016, submitted in response to DOE’s *Invitation for Public Comment To Inform the Design of a Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities*, 80 Fed. Reg. 79872-79874 (Dec. 23, 2015); comment period extended to July 31, 2016, 81 Fed. Reg. 15295-6 (Mar. 22, 2016). We cite to Att. A extensively, rather than simply repeat what we’ve already presented to the Department.

² Indeed, just this week (March 2, 2022) Senators Martin Heinrich (D-N.M.) and Ted Cruz (R-Texas) and U.S. Representatives Teresa Leger Fernández (D-N.M.) and August Pfluger (R-Texas) wisely introduced legislation to prevent private interim nuclear waste storage sites from becoming *de facto* permanent nuclear waste storage facilities. As we detail below, both New Mexico and Texas object to the placement of these storage facilities in their states and this legislative effort would ensure we don’t keep attempting the same misguided, non-consenting waste policies that have put us in this box, failing to find a final solution for nuclear waste. See <https://www.heinrich.senate.gov/press-releases/bipartisan-bicameral-legislation-prohibits-federal-funding-for-private-interim-nuclear-waste-storage>.

III. Introduction

Just as it was six years ago when we last filed serious comments with DOE on these and related matters, after more than sixty years of effort, the federal nuclear waste program in this country has failed to deliver a final resting place for highly toxic, radioactive waste that will be dangerous for millennia. There have been numerous efforts over the years to attribute the failure of the repository program in singular fashion to the Atomic Energy Commission (AEC), to the DOE, to certain Senators, to Nevada Governors of both parties, to several states that refused to entertain even hosting sites, to the NRC Commissioners, and even to the public for failure to accept its part in disposing nuclear waste.

All of this is wrong. Failure cannot be laid at the feet of any one person or entity or the public. Rather, the reasons are multiple and some are detailed in the Final Report of President Obama's Blue Ribbon Commission for America's Nuclear Future (BRC).³ In brief, several agencies (including the EPA, the DOE, the NRC, and the U.S. Department of Justice (DOJ)) and Congress repeatedly pushed aside thorough, careful science, abused the fundamental framework of how significant decisions with environmental impacts are made in this country, and distorted the process for developing licensing criteria for a proposed repository. In each instance such action was done so as to push an expedient solution forward, to weaken environmental standards rather than strengthen them, and always to ensure the site would be licensed, no matter the end result.

Some of the above was done in good faith, other parts less so, but here we are today, again, considering a RFI on how DOE might formulate a consent-based approach for interim storage. Notably, DOE suggests that Congressional appropriations for interim storage are responsible for restricting this RFI solely to the question of interim storage, not a durable, final solution. 86 Fed. Reg. 68245. This is unpersuasive as six years ago the situation was essentially the same (a stalemate on the entirety of the waste program) but former President Obama's DOE sought input on consent-based approaches for both interim and final solutions. And while we can respond (and do so below) to the DOE's proposed questions, we also note that current law requires that commercial spent nuclear fuel and defense high-level radioactive waste be disposed of in one, pre-selected and non-consenting location, in Yucca Mountain, Nevada.⁴ Pointedly, DOE should be asking the questions it wants answered to arrive at a just, equitable nuclear waste policy after decades of failure and should not hide behind manufactured restrictions on the input from the public it requires.

Rather than learn from this grim past, the Department has issued a constrained RFI, and in parallel failed to do the basic work of analyzing and responding to the two rounds of public comments and multiple stakeholder meetings it held between 2015 and 2017. A few weeks ago,

³ President Obama's "*Blue Ribbon Commission on America's Nuclear Future - Report to the Secretary of Energy, January 31, 2012*" (hereafter "*BRC*" or "*Final Report*").

⁴ This history is detailed in Section III of our 2016 comments (Att. A at 7-13). The section concludes with a brief notice of what the BRC presented on nuclear waste disposal efforts in other countries, and additional detail from the ongoing efforts in South Korea. We also touch on the then current state of legislation, consolidated storage, and efforts to develop borehole disposal technology. Little in the situation has altered over in the intervening years. (2016-2022).

we joined with many others to observe we have no way of knowing whether DOE agreed with their previous input on the subject of consent-based siting, or what DOE still wants to know. And if this state of affairs continues and DOE again kicks the can down the road without transformational reform of its waste policy, we worry that in a scant three years a new Administration and a new Congress could plow ahead with revanchist attempts that will waste hundreds of millions of dollars in efforts to reopen the long-defunct Yucca project, or create a controversial, stop-gap interim spent nuclear fuel storage facility that solves none of the long-term challenges.⁵

These are all policies that are likely to ensure continued failure of the repository program. As the very existence of this RFI for Consent Based Interim Storage recognizes, President Obama's 2012 BRC recommendations, though only partially adequate to the task, point a way forward with adherence to: the need for geologic repositories; a science driven process for setting standards; and, most importantly, a focus on consent-based agreements between federal and state partners. In NRDC's view, it is the partnership between federal and state partners that is key to arriving at state consent to host any amount of permanent nuclear waste disposal and we plan to explore how that partnership must happen in extensive detail. Our path forward is presented in Att. A (most succinctly at 17-22) and in direct response to DOE's questions below.

And while we appreciate that the Department at this juncture seemingly concurs with the BRC's recommendation that a consent-based siting process is the best approach, the lack of clarity and failure to respond to two rounds of public comments and multiple stakeholder meetings it held between 2015 and 2017 must be rectified. But as that clearly doesn't seem to be the Department's plan, we will address DOE's questions of (1) equity and fairness in selecting a site; (2) what models and experience are relevant; (3) who should be involved and what are their respective roles; and (4) essential information and encourage the Department to begin a transformational course on this long running debate.

In short, we can dispose of nuclear waste and do so in a fashion that is both scientifically defensible and publicly accepted, but we cannot do so if we keep trying the approach that has failed for over sixty years. To that end, NRDC urges DOE work with Congress, Tribes, States, non-governmental organizations such as NRDC, industry, and environmental justice groups to – (1) recognize that geologic repositories must remain the focus of any legislative effort; (2) create a coherent legal framework before commencing any geologic repository or interim storage site development process; (3) arrive at a consent-based approach for nuclear waste storage and disposal via the fundamental change in law we described above; (4) address storage in a phased approach consistent with, as an example, the careful architecture of former Senator Bingaman's S. 3469 (introduced in 2012); and (5) exclude proliferation-driving and polarizing closed fuel cycle and reprocessing options from this effort to implement the interim storage and ultimate disposal missions.

Importantly, our view on each area is premised on a single overarching caution: in order to avoid repeating the mistakes of the last four decades, Congress must create a transparent, equitable

⁵ And further, necessary and defining efforts such as the legislation introduced by Senator Heinrich this week would no longer be necessary. See n. 2 at 2.

process incorporating strong public health and environmental standards insulated from weakening repository performance standards in order to ensure, at the conclusion of the process, the licensing and operation of a suitable repository site (or sites). Now we turn to DOE's specific questions.

III. NRDC Responses to RFI Questions

Area 1: Consent-Based Siting Process

DOE Question

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

NRDC Response:

While we are pleased DOE has commenced its information collection with this question, we start with the observation that DOE has, over decades, built a legacy of mistrust and a distinct lack of focus on equity throughout the process of nuclear waste management and disposal. *See* Att. A. 7-10. If DOE is to overcome this decades-long legacy to make progress on creating a truly consent-based and socially just process for the grave matter of nuclear waste disposal and storage, it must embrace a transformational strategy. Specifically, DOE must end its allegiance to what has been its most sacred cow – its exemptions from bedrock environmental law that are found in the Atomic Energy Act.

DOE Question

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

NRDC Response:

Clearly centering the perspectives of Tribal, State and local governments is a key factor in the path to an equitable and just consent based siting process, and this remains true for either the long-term, durable solution of repositories or for an interim storage facility.⁶

We described at length in Att. A the reasons for this necessary change (see 3-5, and 17-22), but here we focus on the precise nature of what the BRC got right, and wrong, and make this point in short order. Specifically, for all its laudable qualities, the 2012 BRC's report did not accurately portray or set the path for solving our nuclear waste disposal challenges in an equitable and environmentally just manner. The BRC should have explicitly stated – and we do so here today – that Congress, with its firm understanding of federalism, should legislate a role for EPA and the states in nuclear waste disposal by amending the Atomic Energy Act to remove its express exemptions of radioactive material from environmental laws. Why is this the case?

⁶ To understand what informs our perspective on precisely why this is the case, *see*, Att. A at 3-6, "How did we get here?"

Bluntly, to arrive at any socially just and equitable solution, state, local, and tribal governments must be central in any prescription for a successful repository and waste storage program. Regrettably, current law has treated them as dispensable afterthoughts, preempted from any meaningful power and authority over radioactive waste disposal sites. This fact is central to the history of nuclear waste and the ferocious opposition in siting matters from vulnerable and unwilling recipients in every corner of the country.

Rather than address this problem head on, the BRC chose to carefully skirt the matter in its report, while still noting that federal and state tensions are often central in nuclear waste disputes. The BRC's Final Report states in pertinent part:

We recognize that defining a meaningful and appropriate role for states, tribes, and local governments under current law is far from straightforward, given that the Atomic Energy Act of 1954 provides for exclusive federal jurisdiction over many radioactive waste management issues. Nevertheless, we believe it will be essential to affirm a role for states, tribes, and local governments that is at once positive, proactive, and substantively meaningful and thereby reduces rather than increases the potential for conflict, confusion, and delay.

BRC Final Report at 56 (citation omitted).

The first sentence both makes an observation and states a fact. The observation is that defining a meaningful and appropriate role for states, tribes, and local governments under current law is far from straightforward. The fact is that the Atomic Energy Act provides for exclusive federal jurisdiction over many radioactive waste management issues. According to the BRC, the difficulty of defining a meaningful and appropriate role for states is a "given" because of the fact of exclusive federal jurisdiction.

So what did the BRC suggest relevant decision makers such as the Administration or Congress do about this? Do away with the explicit federal jurisdiction? Increase the exclusivity of the federal jurisdiction? Somehow argue that the problems can be addressed without altering the exclusive federal jurisdiction in some way or another? There is nothing so clear or direct in the text. Rather, the BRC's very next sentence is simply an aspiration, without any explicit recommendation addressing the "given" (*i.e.*, exclusive federal jurisdiction) that makes the process so difficult. The BRC simply noted that it is "essential to affirm a role for states, tribes, and local governments that is at once positive, proactive, and substantively meaningful." NRDC agrees with the aspiration, thinks it's a nice thing to write, but plainly the BRC missed an important opportunity to address the fundamental roadblock to solving our nuclear waste problem by failing to provide a specific recommendation on how to address exclusive federal jurisdiction over nuclear waste.

It is past time to rectify this oversight. Without fundamental changes in our current, non-consent-based law that explicitly address what the BRC termed, "federal, state and tribal tensions," we will never approach closure and consent on transparent, phased, adaptive, and socially just decisions for nuclear waste siting. Ending the AEA exemptions would be the most simple, straightforward way to do this. EPA, with the exemptions gone, would be required under the

Resource Conservation and Recovery Act (RCRA, or the hazardous waste laws) would be required to set health standards for this extremely toxic waste. This, in turn, would provide states authority to decide if and how much waste to accept via their own permitting process, but one that rests on a minimum foundation of EPA standards (which states could then strengthen if they so choose, but never weaken). States (and EPA, and citizens for that matter) could also enforce these strict standards and even ensure that facilities are shut down or lose their license if they fail to operate under strict, protective standards. None of this is the case now. Rather than simply be subjected as targets and recipients of waste, states, tribal nations, regional governments, communities of color, and vulnerable populations of all types could rely on safety and environmental protections that can allow scientifically defensible and publicly accepted siting solutions.

In 2016 we explored in detail this decades-overdue change in the law (Att. A at 17-22) and presented extensively to Congress, to DOE, and in public hearings. In the intervening years – and especially during the Trump Administration – we found only silence in response. Now, in 2022, DOE has an opportunity and, we believe, consistent with its significant environmental justice initiatives taking place across the federal government, an obligation to embark on making this equitable, transformational policy evolution. The DOE and its nuclear waste policies should be no different. And we know where to point the Department to get started.

Last Autumn, Senator Ed Markey (D-Mass.) and Congressman Mike Levin (D-CA) introduced legislation that offers a way forward – to establish a task force on the implications of amending the Atomic Energy Act of 1954 to remove exemptions from environmental laws for spent nuclear fuel and high-level radioactive waste to allow for consent-based siting of geologic repositories.⁷

This historic proposal is the long-awaited follow up to former President Obama’s Blue Ribbon Commission on nuclear waste. The BRC spent years getting to two important conclusions: (1) we need repositories for nuclear waste and, (2), in order to gain the public’s acceptance, we must obtain consent of the governed for such facilities, something that’s been lacking in every effort since our nation first started trying in the 1960s to impose sites on unwilling hosts. But as we explained above, the BRC never came close to defining what consent might mean or how we as a nation might achieve it. The Markey-Levin Nuclear Waste Task Force provides a pathway for answering that precise question. The Task Force’s wide inclusion of all the interested players, open hearings, and a draft report for public comment will give everyone the opportunity to weigh in on how we can finally get that elusive “consent” to accept the disposal of nuclear waste.

NRDC thinks that bedrock environmental laws can break this 60-year logjam, but others may have different ideas. As we publicly stated at the time of the Task Force introduction, “...this is the perfect opportunity to make the case why strong environmental laws, successful in improving so many parts of American life via cleaner air and water and the cleanup of toxic industrial sites, aren’t up to the task of solving nuclear waste. When everything is on the table, we are confident

⁷ See draft of legislation at <https://www.markey.senate.gov/imo/media/doc/Nuclear%20Waste%20Task%20Force%20Act.pdf>; see also, <https://www.nrdc.org/experts/geoffrey-h-fettus/step-toward-breaking-logjam-nuclear-waste>.

that bedrock environmental law will carry the day, but that's why we have task forces on such challenging issues.”

We are pleased the Task Force is set to study the change that NRDC has advocated for years, but caution that this is only a profoundly necessary step in the process of finally disposing of nuclear waste. And as that first step, it merits DOE's and the Administration's strong and unflinching support. We very much hope the Department responds to these comments with quick and immediate public expressions of approval for the Markey-Levin legislation.

While the Task Force, if it's enacted this year (and it can be with the Administration's support), would analyze the nuclear waste impasse and write a report (things which have been done for decades with no resolution), the subject matter under consideration by the Task Force will virtually guarantee that the question of *how* we arrive at a final waste solution will be addressed. There can be no more ducking or eluding the hard matters of “defining a meaningful and appropriate role for states, tribes, and local governments.” It is time for DOE to get on board, support the creation of the Task Force, and get down to the business of recommending legislation that would place our most dangerous nuclear waste directly under our bedrock environmental laws.

DOE Question

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

NRDC Response:

There is a simple, plain answer here for what benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites – and that is, meaningful regulatory authority.

As we noted above, state or tribal consent and public acceptance of a nuclear waste solution will never be willingly granted unless and until power to make such a decision as to how, when, and where such waste is disposed of is shared and not decided by federal fiat. And NRDC believes that the only way to arrive at such acceptance is by ending the AEA exemptions from environmental law and allowing EPA to set strong disposal standards for nuclear waste that can then be strengthened, implemented, and enforced by States via a hazardous waste permit. Bedrock environmental laws have worked to solve many national problems and it's an anachronism at this point that they don't fully apply to nuclear waste.

The Markey-Levin Nuclear Waste Task Force offers a straightforward path for DOE and everyone else to set forth their respective plans to finally solve this decades old dilemma and it merits the Administration's strong support.

DOE Question

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

NRDC Response:

The first and most important barrier to the successful siting of a federal interim storage facility (whether consent based or not) is one that should exist and, frankly, one that should have the full support of the Biden Administration Energy Department. That barrier is the linkage between storage and disposal solutions – a linkage that must remain strong. Senator Heinrich’s legislation introduced just this week is plain evidence of this continuing need.

Former New Mexico Senator and Energy & Natural Resources Committee Chairman Bingaman explained the meaning and import of the linkage between storage and disposal in pointed terms a few years after his retirement:

The other major change in dynamics is that there is less commitment in Washington to finding a permanent solution to the nuclear waste problem. In 1982 when the Nuclear Waste Policy Act was passed there was a consensus that the country needed to give priority to finding a permanent geologic repository for high-level nuclear waste. That has obviously proven very difficult to do. Today some who favor moving high level nuclear waste from its present locations seem satisfied to settle for an interim storage solution, rather than a permanent repository. The obvious effect of this is to leave the problem of permanent disposal of high-level nuclear waste to future generations. My strong belief is that Congress and the country made the right decision in 1982 when the Nuclear Waste Policy Act committed us to pursue permanent disposal of nuclear waste. *We should insist on progress in finding a permanent repository as a part of any plan to construct and use interim storage facilities.*⁸ (emphasis added)

Former Chairman Bingaman, a long and trusted colleague of President Biden, is precisely correct on this matter. We urge you to heed his careful words as efforts to initiate a temporary storage facility are now, unfortunately, picking up speed. The linkage of interim with the development of a permanent solution is a crucial guard against a “temporary” storage facility becoming a permanent one, and it should guide DOE’s administrative actions as well as the legislative process. Consistent with the BRC’s findings, a case can only be made for interim storage if it is an integral part of the repository program and not as an alternative to, or *de facto* substitute for, permanent disposal.

Rather than prematurely bypassing a careful process that can arrive at protective, environmentally sensible, and scientifically defensible solutions, NRDC urges spent fuel storage efforts to focus on vigorous efforts by industry and by appropriate regulatory authorities to ensure that all near-term forms of storage meet high standards of safety and security for the decades-long time periods that interim storage sites will be in use. While NRDC can agree with the overall concept of consolidated interim storage for a measured amount of spent fuel that meets strong safety criteria (moving fuel from seismically active areas, for example) and

⁸ See DOE CONSENT BASED SITING HEARING PHOENIX—JUNE 23, 2016, Statement by Jeff Bingaman Former U.S. Senator (N.M), <https://www.energy.gov/sites/prod/files/2016/07/f33/Senator%20Bingaman%27s%20Remarks.pdf>; see also, Chairman Bingaman’s Statement at the introduction of S. 3469, 2012, <https://www.energy.senate.gov/services/files/7F1E595C-013D-4FB6-8729-9234D4D5A0C8>.

removing the stranded fuel from decommissioned plants, we can only do so after the introduction and implementation of a phased, consent-based approach that creates a permanent solution.

Next, and most obviously, another barrier and impediment to the successful siting of federal interim storage facilities using a consent-based process is the fact that the current efforts to site interim storage facilities are not consent-based and are ferociously opposed by the targeted states. Both Texas and New Mexico have expressly objected to the siting of interim storage in their respective states and show every sign that years of litigation, rancor, and failure just like the past is in store for these latest efforts.⁹

So how can DOE help to address these barriers and impediments? DOE could, and it should, support the Heinrich legislation (see n.2 at 2) and also support the Markey-Levin Nuclear Waste Task Force legislation. The Department should deeply engage in the work of the Task Force to help create a consent-based process that centers equity and durable, publicly accepted protections from the most dangerous and long-lasting waste in the world.

Make no mistake, NRDC is aware that ending the anachronistic AEA exemptions does not guarantee a repository or interim storage site will be in place in the next few years. Indeed, expecting fast progress on nuclear waste seems a fool's errand in light of the history. But ending these exemptions and providing RCRA authority for nuclear waste solves the most crucial matter for consent and meaningful social equity – the opportunity for meaningful state oversight over nuclear waste and citizen enforcement of serious protections. Any such statutory change bars the substantial likelihood of Congressional terms and modifications exacted from states (that might be willing to host a repository) years into a good faith negotiation on a site. It is past time to normalize nuclear waste with the rest of environmental law and NRDC sees this as the key to developing a durable consent-based approach and surmounting barriers to solving our nuclear waste dilemma.

DOE Question:

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

NRDC Response:

This is a simple question to answer. Don't site or support the licensing of new interim storage facilities (beyond those that already exist at operating commercial reactors under the licensing jurisdiction of the NRC) until such time as a permanent repository program is well underway or even ready to be put in operation. That's consistent with the law and, happily, the right thing to do. Then, DOE won't be in the position it is in now, of trying to convince communities that the nuclear waste in their communities will be addressed and not become *de facto* repository sites.

There are, however, communities that will host spent fuel for decades to come – and those communities are the ones that hosted operating reactor sites. We encourage DOE to use this time

⁹ See NRDC Testimony Before the Senate Energy & Natural Resources Committee, June 27, 2019, and associated letters and attachments found on Att. B-D, 34-40. Found online at <https://www.energy.senate.gov/services/files/0BF5FFBC-A14A-43AA-8364-BACE1BEAF26C>.

to establish reasonable expectations and plans about how that fuel will be managed. And while it's true that those communities with operating reactors benefitted from power production for decades, but they are now looking at decades of nuclear waste storage that was not necessarily understood when the reactors were first built in the 1960s, 70s, 80s, or even a few later.¹⁰

In any event, the Biden DOE should be clear with existing host communities of currently operating reactors or potential new siting communities that its priorities are to: (1) recognize that geologic repositories must remain the focus of any legislative effort; (2) create a coherent legal framework before commencing any geologic repository or interim storage site development process; and (3) arrive at a consent-based approach for nuclear waste storage and disposal via the process laid out in the Markey-Levin Nuclear Waste Task Force legislation. And along the way the Biden DOE should make sure that it invites those communities – especially those that have been overlooked or targeted for non-consenting waste disposal over the past 60 years – to participate in the Task Force work to make their needs known.

DOE Question:

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

NRDC Response:

The Department cannot and should not attempt to decide all of this alone or in a non-transparent fashion as it has done in the past. Asking this question is a first step, but a formalization of the public process that can be found in the Markey-Levin Nuclear Waste Task Force legislation provides a direct route for all the affected parties to have their say, including vulnerable environmental justice communities that have suffered for years as a result of DOE nuclear weapons contamination and targeted dumping of commercial nuclear waste.

DOE Question:

7. What other issues, including those raised in the Draft Consent-Based Siting Process should the Department consider in implementing a consent-based siting process?

NRDC Response:

The DOE should expressly and publicly support the earliest possible enactment of the Markey Levin Nuclear Waste Task Force Legislation.

Area 2: Removing Barriers to Meaningful Participation

DOE Question:

¹⁰ One way to work with communities to create both trust and workable expectations can be found in the Stranded Act, introduced by Senator Duckworth. See, <https://www.duckworth.senate.gov/news/press-releases/duckworth-schneider-and-colleagues-renew-bipartisan-push-to-aid-nuclear-affected-communities>. It's a worthy bill that is an excellent first attempt to address the burdens of the nuclear waste legacy faced by these communities.

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

NRDC Response:

The biggest barrier to meaningful participation in a consent-based siting process is the fact that a consent-based siting process does not exist at the moment and that it will take an act of Congress to make such a thing a reality. The only way to arriving at a consent-based siting process is by transforming the entire institutional structure of how we make decisions about nuclear waste and the current structure of the Nuclear Waste Policy Act (NWPA). To address this profound challenge – not just mitigate it – DOE must join NRDC and others to commence work for fundamental changes in our current, non-consent-based law that explicitly address what the BRC termed, “federal, state and tribal tensions,” or we will never approach consent on transparent, phased, adaptive and socially just decisions for nuclear waste siting.

State consent and public acceptance of a nuclear waste solution will never be willingly granted unless and until power to make such a decision as to how, when, and where such waste is disposed of is shared rather than decided by federal fiat. There is only one way that can happen consistent with the protective, cooperative federalism at the heart of environmental law. Specifically, Congress must finally end the AEA’s exemptions from environmental law. Our hazardous waste and clean water laws must have full authority over radioactivity and nuclear waste facilities so that EPA and – most importantly – the states can assert direct regulatory authority. This will necessarily alter the federalism oversight that has been central to the failure of the NWPA. The NWPA’s (and AEA’s) misunderstanding of the importance of federalism is at the heart of the repository program’s failure. If we don’t find a way to give EPA and the states direct regulatory and permitting power over nuclear waste – and that is accomplished only by doing away with the environmental exemptions in the AEA – we will not solve this dilemma. Lack of consent from an unwilling host state selected in an expedient demonstration of legislative and administrative power over the (statutorily defined) powerless is a recipe for inaction and, ultimately, disaster in this country, whether the issue is nuclear waste or any other great public concern. The Markey-Levin Nuclear Waste Task Force provides a perfect forum for just such a discussion and DOE should work for its immediate enactment.

DOE Question:

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

NRDC Response:

We think this is an important question, and one that gets to the heart of what should be a new regulatory system that could result after the Markey-Levin Nuclear Waste Task Force examines the range of regulatory questions and the needs associated with safely ensuring repositories can comply with strong standards. Indeed, financial, technical, and legal resources are important – but they have to be resources focused on supporting the technical ability of the states to be able to effectively regulate potential repositories, not interim storage sites. We don’t want to pre-

judge what the Nuclear Waste Task Force might conclude, but it's clear that sustained and durable (and shielded from the winds of political change) funding for regulatory expertise will need to be directed at both EPA and any states that currently or may in the future host nuclear waste.

DOE Question:

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

NRDC Response:

If DOE tries to “woo” communities to host nuclear waste, the only thing DOE will elicit is more acrimony, contentiousness, and we’ll never solve this gigantic environmental danger. The Department must stop the attempts to roll over states, tribes, and vulnerable communities and instead start supporting a durable readjustment of the power dynamic that allows EPA, states, tribes, and communities to protect their environment and citizens. See for example, our discussion of DOE’s failed borehole efforts in 2015-16, Att. A, at 16, 17 for an object lesson in how not to conduct mutual learning and collaboration. We reiterate the point from a former South Dakota Governor, “North Dakota sent them on their way; we’d be happy to do the same thing ...I told them that if they want to divide communities and divide families and divide churches, keep it up, this will do it. We’ve had pig feedlot issues here that divided people so much they won’t sit in the same pew in church anymore.”

By contrast, support for the Markey-Levin Task Force is clear opening to maximize opportunities for mutual learning and collaboration. We urge the DOE to seize this moment.

DOE Question:

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

NRDC Response:

See answer above, *supra* at 5-8.

DOE Question:

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

NRDC Response:

Respectfully, what communities, governments, and other stakeholders need to engage with the Department is meaningful authority to chart a scientifically defensible and publicly accepted course. Under current law and DOE policy, that is not an option at this moment. Thus, we believe DOE should embark on transforming its nuclear waste policy and it can take those first steps in supporting the both the Heinrich and Markey-Levin legislation.

Area 3: Interim Storage as Part of a Waste Management System

DOE Question:

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

NRDC Response:

This question is fundamentally repetitive of the previous ones, so we feel no need to reiterate what has already been presented – that it is NRDC's view is that bedrock environmental laws can provide a direct pathway to ensure consistent application of the principles espoused via the Administration's environmental justice efforts. We also take this moment to remind DOE staff that it should look to many recent Executive Orders as it carries out its work, including:

- 12898, Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations (Feb. 16, 1994)
- 13175, Consultation and Coordination with Indian Tribal Governments (Nov. 9, 2000)
- 13985, Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (Jan. 25, 2021)
- 13990, Protecting Public Health and the Environment and Restoring Science To Tackle the Climate Crisis (Jan. 25, 2021)
- 14008, Tackling the Climate Crisis at Home and Abroad (Feb. 1, 2021)
- 14015, Establishment of the White House Office of Faith-Based and Neighborhood Partnerships (Feb. 14, 2021)
- 14030, Climate-Related Financial Risk (May 20, 2021)
- 14035, Diversity, Equity Inclusion, and Accessibility in the Federal Workforce (June 25, 2021)

DOE Question:

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

NRDC Response:

The context and framing of the question is unclear, and we are unsure what DOE intends to describe in the above question. Is the Department attempting to describe the co-location of spent fuel reprocessing facilities near or adjacent to interim storage sites? If that is the case, we'll make it precisely clear that the BRC Recommendations and every serious subsequent legislative proposal associated with it have wisely resisted inclusion of support for reprocessing, fast reactors, or other closed fuel cycle options as a corollary to new nuclear waste policy. We fully agree with relevant BRC findings, that there are "no currently available or reasonably foreseeable" alternatives to deep geologic disposal.¹¹ As Senator Bingaman noted in 2012, "even if we were to reprocess spent fuel, with all of the costs and environmental issues it involves, we would still need to dispose of the radioactive waste streams that reprocessing itself produces and

¹¹ BRC Final Report at 100.

we would need to do so in a deep geologic repository.”¹² At no point should this evolving nuclear waste process include support for so-called closed fuel cycle options.

Any attempts to revive efforts to reprocess commercial spent fuel will elicit fierce objection from NRDC and many others, including those from the security community. We remind the Department that if it decides to press ahead with any attempt to revive a long defunct reprocessing program (as it did with the Global Nuclear Energy Partnership during the Bush Administration), the Department must adhere to National Environmental Policy Act (NEPA) and first initiate a broad, comprehensive, and technically searching review of the environmental impacts of the entire proposed Program.

An Environmental Impact Statement (EIS) can analyze environmental impacts at a site or project specific level or can be broader and analyze impacts at a programmatic level. A Programmatic EIS is necessary where “actions are ‘connected,’ ‘cumulative,’ or ‘similar,’ such that their environmental effects are best considered in a single impact statement.” *Am. Bird Conservancy v. Fed. Comm’n Comm’n*, 516 F.3d 1027, 1032 (D.C. Cir. 2008); *see also* 40 C.F.R. § 1052.4. (“Agencies shall evaluate in a single environmental impact statement proposals or parts of proposals that are related to each other closely enough to be, in effect, a single course of action.”). If DOE is considering a reprocessing or co-location program, as potentially suggested in the question, before taking any further action in support of such actions, the Department must prepare a Programmatic EIS that fully assesses the environmental impacts of the entire uranium fuel chain and waste options, including health and environmental and security impacts and costs, and that examines a reasonable array of alternatives.

DOE Question:

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

NRDC Response:

We are, admittedly, a bit baffled by the placement of this crucial question at the close of this RFI. We have addressed in detail the crucial issue of linkage between storage and disposal and stress again that the establishment of a permanent repository has everything to do with the allowance of an interim storage facility to go forward. The current law reflects that fact, as does the recent introduction of legislation from Senator Heinrich.¹³ DOE’s failure to clearly outline what it intends via these questions, limiting analysis and inquiry to just the matter of interim storage and never meaningfully responding to previous requests for public input sheds a worrying light on DOE’s intentions.

4. What other issues should the Department consider in developing a waste management system?

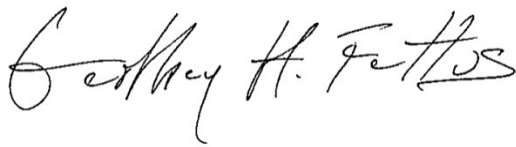
¹² *See, Previewing the Nuclear Waste Bill*, Remarks by Chairman Bingaman to the Bipartisan Policy Center, June 6, 2012, online at <https://www.energy.senate.gov/public/index.cfm/democratic-news?ID=490349a4-4b5e-4ac2-83e7-6e9a54c7aaf0>.

¹³ *See, supra* at 8-10 and in Att. A at 15-17.

The Biden DOE should immediately and publicly express strong support for the Markey-Levin Nuclear Waste Task Force. The Task Force is designed as an explicit follow on to the work of the Obama-era BRC, specially focused on how to arrive at “consent” for the siting of a nuclear waste repository. The Task Force is, at present, designed to have 30 members from five relevant federal agencies, seven states, at least three tribes, and fifteen other non-governmental members from large to small regional environmental groups, environmental justice communities, labor, health, and industry interests. It’s the first serious and truly constructive effort at solving our nuclear waste conundrum since former Senator Bingaman tried in 2012. We think a decade more of this stalemate makes our point that it’s time for DOE to adopt a transformational policy rather than attempting the same thing, over and over.

We appreciate the opportunity to comment. If you have any questions, please do not hesitate to contact us.

Sincerely,



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Natural Resources Defense Council, Inc.,

Response to DOE's Invitation for Public Comment To
Inform the Design of a Consent-Based
Siting Process for Nuclear Waste
Storage and Disposal Facilities



July 29, 2016

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July 29, 2016

Via Electronic Mail

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RE: NRDC Response to Invitation for Public Comment to Inform the Design of a Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities

Dear Sir/Madam:

The Natural Resources Defense Council (NRDC) appreciates this opportunity to submit comments on the U.S. Department of Energy's (DOE) efforts to implement a "consent-based siting process to establish an integrated waste management system to transport, store, and dispose of commercial spent nuclear fuel and high level defense radioactive waste." *See, Invitation for Public Comment To Inform the Design of a Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities*, 80 Fed. Reg. 79872-79874 (Dec. 23, 2015) (hereinafter "Consent Based IPC"); comment period extended to July 31, 2016, 81 Fed Reg. 15295-6 (Mar. 22, 2016).

I. NRDC Statement of Interest

NRDC is a national non-profit membership environmental organization with offices in Washington, D.C., New York City, San Francisco, Chicago, Los Angeles, Missoula and Beijing. NRDC has a nationwide membership of over one million combined members and activists. NRDC's activities include maintaining and enhancing environmental quality and monitoring federal agency actions to ensure that federal statutes enacted to protect human health and the environment are fully and properly implemented. Since its inception in 1970, NRDC has sought to improve the environmental, health, and safety conditions at the nuclear facilities operated by Department of Energy (DOE) and the civil nuclear facilities licensed by the Nuclear Regulatory Commission (NRC) and their predecessor agencies, and we will continue to do so.

II. Summary of Comments

After nearly 60 years of effort, the federal nuclear waste program in this country has failed to deliver a final resting place for highly toxic, radioactive waste that will be dangerous for millennia. Over the years, there have been numerous efforts to attribute the failure of the repository program in singular fashion to the Atomic Energy Commission (AEC), to the DOE, to certain Senators, to Nevada Governors of both parties, to several states that refused to entertain

even hosting sites, to the NRC Commissioners, and even to the public for failure to accept its part in disposing of nuclear waste.

All of this is wrong. Failure cannot be laid at the feet of any one person or entity or the public. Rather, the reasons are multiple and some are detailed in the Final Report of President Obama's Blue Ribbon Commission for America's Nuclear Future (BRC).¹ In brief, several agencies (including the U.S. Environmental Protection Agency (EPA), the DOE, the NRC, and the U.S. Department of Justice (DOJ)) and Congress repeatedly pushed aside thorough, careful science, abused the fundamental framework of how significant decisions with environmental impacts are made in this country, and distorted the process for developing licensing criteria for a proposed repository. In each instance such action was done so as to push an expedient solution forward, to weaken environmental standards rather than strengthen them, and always to ensure the site would be licensed, no matter the end result.

All of this was done in a context that should be starkly contrasted with the Consent Based IPC under discussion today – to wit, this history, and what currently exists in law is the precise opposite of a consent based process for nuclear waste. Pointedly, current law requires that commercial spent nuclear fuel and defense high-level radioactive waste be disposed of in one, pre-selected location, in Yucca Mountain, Nevada. This history is detailed in Section III of our comments. The section concludes with a brief notice of what the BRC presented on nuclear waste disposal efforts in other countries, and additional detail from the ongoing efforts in South Korea. We also touch on the current state of legislation, consolidated storage and efforts to develop borehole disposal technology.

Rather than learn from this past and ongoing efforts, we fear a new Administration and a new Congress could plow ahead with revanchist attempts that will waste tens of millions of dollars in efforts to reopen the now-defunct Yucca project, or create a controversial, stop-gap interim spent nuclear fuel storage facility that solves none of the long-term challenges. These are policies that are likely to ensure continued failure of the repository program. As the very existence of this Consent Based IPC recognizes, President Obama's 2012 BRC recommendations, though only partially adequate to the task, point a way forward with adherence to: the need for geologic repositories; a science driven process for setting standards; and, most importantly, a focus on consent-based agreements between federal and state partners. In NRDC's view, it is the partnership between federal and state partners that is key to arriving at state consent to host any amount of permanent nuclear waste disposal and we plan to explore how that partnership must happen in extensive detail. Our path forward is presented in Section IV of these comments.

We appreciate that the Department concurs with the BRC's recommendation that a phased, adaptive, consent-based siting process is the best approach to gain the public trust and confidence needed to site nuclear waste facilities. To that end, our comments throughout precisely address DOE's questions of (1) equity and fairness in selecting a site; (2) what models and experience are relevant; (3) who should be involved and what are their respective roles; and (4) essential information.

¹ President Obama's "Blue Ribbon Commission on America's Nuclear Future - Report to the Secretary of Energy, January 31, 2012" (hereafter "BRC" or "Final Report").

III. How Did We Get Here?

A. Both Sound Science & Equitable Politics Will Be Crucial to Solving Nuclear Waste

The history of the nuclear waste repository program is replete with failures of science, of federal state and local agencies, of political, industry, and even public interest actors. And if considered carefully, the failures associated with nuclear waste suggest a single, clear conclusion that we'll turn to in a moment. But just because that conclusion is clear does not mean that the failures necessarily fit into simple categories and explanations as to why our repeated national efforts to dispose of nuclear waste have cratered so dismally.

Let's dismiss simple categories and clichéd explanations as to why sixty years of national effort to solve our nuclear waste problem has failed. Platitudes such as "it is imperative to keep politics out of the process" and "science and science alone must drive the process" (imagine the raised voice and clenched fist) are, after 60 years, reductive to the point of absurdity.

As an initial matter, *of course* science must drive the process. Any discussion of attempts to isolate toxic, dangerous radioactive waste for a length of time that dramatically exceeds human history is obviously an extraordinary technical and engineering challenge. But the mere existence of this painfully clear scientific challenge does not, and nor should it, do away with the spectacularly difficult institutional hurdles that are also presented by *how* society should decide to manage and dispose of its nuclear waste. Who gets to decide such matters and how do they carry out such a grave responsibility? To suggest one should keep "politics of the process" ignores the history of human decision making and functionally dismisses the only way we have to make collective, societal decisions without violence. Or, more dismally, to suggest we keep politics out of the process via Congressional fiat² conjures a dystopian view of a subjugated and unwilling population that will and must, ultimately, accede to whatever the current power structure wants.

Politics is, in significant measure, a method of how we apportion power in society. And the exercise of power when dealing with a subject as fraught and confounding as nuclear waste disposal is a profound challenge that defies easy, reductive answers such as "keep politics out of it." Just as with science, *of course* politics will be part of the discussion. Indeed, with nuclear waste we are all asked to trust that the decisions we make today will, in a time perhaps far distant, somehow work without a dreadful disaster. Clear, unflinching and honest assessments of the science and small "p" politics – that is, how power is apportioned, how are decisions made and by whom – must both be at the heart of how we collectively decide to finally move forward on providing agency and legislative direction for the disposal of nuclear waste. And such an effort will take a firm understanding of the past and strict adherence to George Santayana's wise maxim: "those who do not understand history are doomed to repeat it."

² See *NRDC Testifies in the House of Representatives on Nuclear Waste*, May 15, 2015, Matthew McKinzie writes of a member of the House Majority making it perfectly clear to the State of Nevada with respect to the abandoned Yucca Mountain project, "just saying no is not an option," <https://www.nrdc.org/experts/matthew-mckinzie/nrdc-testifies-house-representatives-nuclear-waste> (accessed July 22, 2016).

In coming to grips with that history, a central piece is appreciating the metamorphosis of Congressman Mo Udall's (AZ-D) Nuclear Waste Policy Act (NWPA). Indeed, NRDC views the original incarnation of the NWPA as a remarkable, nearly visionary piece of legislation that contained one tragic, fatal flaw – which was, a deep misunderstanding of federalism and the necessary role of states. And that flaw is the central reason we are here today commenting on DOE's Consent Based IPC and it is the single “clear conclusion,” noted at the outset, that we have drawn from the history of failures associated with nuclear waste.

As DOE is well aware, the enacted 1982 law set forth obligations and duties for EPA, DOE and NRC, with Congressional oversight and checkpoints along the way. Fundamentally, the law attempted to place science in the forefront and also balance power in a way that might allow this fraught, difficult process of finding disposal sites for nuclear waste come to an end. But, importantly, the NWPA never challenged or altered in any way the Atomic Energy Act of 1954's (AEA) provision for exclusive federal jurisdiction over radioactive waste. Despite this baked in oversight, the attempt at the legal balancing act was unprecedented at the time and that observation remains true today. And as we all know, the balancing act was disrupted as the law was repeatedly altered and the process was finally abandoned by the current administration in 2009.

But why the repeated derailments? A myriad of answers have been offered, generally suggesting that “not in my backyard” (NIMBY) sensibilities and associated politics are responsible for the failure to license and open Yucca Mountain. But as noted at the outset – this is wrong. The deep misunderstanding of federalism and the necessary role of states at the heart of the NWPA just kept getting lost over the years and the federal exclusivity over nuclear waste regulation was simply presumed *a priori*, without consideration as to whether that might be at the root of the problem.

So how is the misunderstanding of federalism at the root of the problem? The relationship of the federal government to the governments of the fifty states that comprise our republic is the fundamental fact of American politics. Our political system has never easily digested or durably solved profound national problems like voting rights, health care, gun control, carbon restrictions, or the disposal of nuclear waste, by either federal fiat or, conversely, by turning matters over to the states entirely (again, please see *e.g.*, voting rights).³ And in every instance of national decision making on these and other complex issues, heavily compromised laws or regulations have taken into account the needs and perspectives of states.

Bedrock environmental laws reflect this fact. With the notable exceptions of the Atomic Energy Act (the organic act for nuclear power) and its progeny, the NWPA, there is federalist intention at the heart of environmental statutes and a role expressly reserved for the states. As examples, the Clean Water Act, Clean Air Act, and Resource Conservation & Recovery Act (RCRA) allow states authority to implement those air, water, and waste programs, respectively, in lieu of a

³ For perspective on the continuing interplay of the constitutional principles of federalism and equal sovereignty of the states and the extraordinary controversies that still attend such matters, see the relatively recent landmark (5 votes to 4 votes) Voting Rights decision and its vigorous dissent, *Shelby County, Ala. v. Holder*, 133 S. Ct. 2612 (2013).

federal program. States that obtain “delegated” authority from the federal government must meet minimum federal standards (and the federal government retains independent oversight and enforcement authority). And generally, depending on state law, those delegated states can impose stricter requirements or different regulatory mandates. Nuclear waste should be no different, but under the AEA and the NWPA, it is.

So, where do these observations leave us? First, any suggestion that the failed Yucca Mountain project can be quickly and easily restarted and brought to a successful conclusion should be dispensed with as folly. Nevada has deeply rooted bipartisan objections to the failed project and it falls precisely into the netherworld of abused, expedient efforts to site the facility over both scientific and political objections. As we describe in some detail (*infra* at 7-10, 13-14), continuing down that road, whether in good faith or on some revanchist journey, is likely a doomed effort, sure to derail the solution for nuclear waste for at least another generation.

Second, just having a united Congress, industry representatives and Administration will not “solve” the problem of nuclear waste and put Yucca back on track or even necessarily create the new, consent based process many hope for. Trusting in small “p” power politics and a new Senate without Nevada’s Senior Senator Harry Reid in 2017 as a pathway to opening Yucca Mountain over Nevada’s objections is misplaced and, frankly, missing the point of this introduction. Indeed, we’ve had portions of this power politics equation at various times over the years (see the late 1980s, most of the 90s, and the Bush Administration and Republican controlled House and Senate from 2002 to 2006) and we are still languishing without a meaningful nuclear waste solution.

Rather, it is our firm conclusion a new process must be created – and yes, it must be consent based and take into account the needs of the industry and their federal champions. But this time it must also take into account the need for public and state acceptance. State consent and public acceptance of a nuclear waste solution will never be willingly granted unless and until power to make such a decision as to how, when and where such waste is disposed of is shared and not decided by federal fiat. There is only one way that can happen consistent with the protective, cooperative federalism at the heart of environmental law. Specifically, Congress must finally end the Atomic Energy Act’s exemptions from environmental law. Our hazardous waste and clean water laws must have full authority over radioactivity and nuclear waste facilities so that EPA and – most importantly – the states can assert direct regulatory authority. This will necessarily alter the federalism oversight that has been central to the failure of the NWPA. *See, infra* 19-22.

It is our contention today and has been since 2009 that the NWPA’s (and AEA’s) misunderstanding of the importance of federalism is at the heart of the repository program’s failure. If we don’t find a way to give EPA and the States regulatory power over nuclear waste – and that is accomplished only by doing away with the environmental exemptions in the AEA – we will not solve this dilemma. Lack of consent from an unwilling host state selected in an expedient demonstration of legislative and administrative power over the (statutorily defined) powerless is a recipe for disaster in this country, whether the issue is nuclear waste or any other great public concern.

In Section IV we discuss our prescription for how to apportion this power to decide how and where we will dispose of nuclear waste for the millennia to come. But for now, we'll start at the beginning.

B. The Need to Isolate Nuclear Waste

Since the first days of the atomic age, America has used nuclear fission to generate electricity. As of this day, nineteen percent of the nation's electricity is generated by nuclear reactors.⁴ The United States government, via the action of the NRC, licenses nuclear power plants and regulates their impacts on public safety and the natural environment.

The nuclear fuel cycle and the decision to license power reactors have significant environmental and public safety impacts. As an example, nuclear plants pose a continuing risk of nuclear accidents, including a small, clear probability of a high-consequence event such as the Fukushima disaster in Japan. Further, environmental harms and risks from the nuclear fuel cycle include radionuclide and heavy metals contamination from uranium mining and processing activities, massive freshwater withdrawals and evaporative losses for reactor cooling, excessive thermal discharges to aquatic environments, massive entrainment and destruction of young fish stocks by reactor condenser cooling systems, and the leakage of radionuclides from storage and processing of spent nuclear fuels. Nuclear plants bear potentially catastrophic vulnerability to earthquakes, requiring seismic limitations on siting and co-locating nuclear plants and/or increased costs for improved seismic resistance.

But chief among nuclear power's environmental impacts is nuclear waste – specifically, the production of spent nuclear fuel. Although nuclear power emits substantially less harmful greenhouse gases than fossil fuels, the nuclear fuel cycle produces a deadly and long-lasting byproduct: highly radioactive spent nuclear fuel. At high doses, radiation exposure will cause death.⁵ At lower doses, radiation still has serious health effects, including increased cancer risks and serious birth defects such as mental retardation, eye malformations, and small brain or head size.⁶

Along with serious health consequences, spent nuclear fuel remains dangerous for millennia. The United States Court of Appeals for the D.C. Circuit described it thus: “radioactive waste and its harmful consequences persist for time spans seemingly beyond human comprehension. For example, iodine-129, one of the radionuclides expected to be buried at Yucca Mountain, has a half-life of seventeen million years.” *Nuclear Energy Institute, Inc. et al., v. Environmental Protection Agency*, 373 F.3d 1251, 1258 (D.C.Cir. 2004), *citing*, Comm. on Technical Bases for

⁴ World Nuclear Ass'n, World Nuclear Power Reactors & Uranium Requirements, <http://www.world-nuclear.org/info/reactors.html>. (Last visited July 27, 2016).

⁵ National Institutes of Health, Fact Sheet: <http://www.nlm.nih.gov/medlineplus/radiationexposure.html> (accessed online July 29, 2016).

⁶ See Environmental Radiation Protection Standards for Yucca Mountain, Nevada, 64 Fed. Reg. 46,976, 46,978 (Aug. 27, 1999).

Yucca Mountain Standards, Nat'l Research Council, *Technical Bases for Yucca Mountain Standards*, 18-19 (1995).

Because of the lasting dangers associated with nuclear waste, the federal government more than 60 years ago assumed the burden of disposal of the nuclear industry's waste. High level nuclear wastes remain dangerous to humans for long periods of time. The D.C. Circuit observed: "[h]aving the capacity to outlast human civilization as we know it and the potential to devastate public health and the environment, nuclear waste has vexed scientists, Congress, and regulatory agencies for the last half-century." *NEI et al.* at 1257. Because of this danger, since the National Academy of Science's original recommendations in 1957,⁷ it has been a nearly consensus view among government, industry and environmental stakeholders that the waste from the nation's nuclear weapons program and its commercial nuclear power plants must be buried in technically sound deep geologic repositories, permanently isolated from the human and natural environments. This principle was first codified as national policy nearly 40 years ago in the Nuclear Waste Policy Act (NWPA), 42 U.S.C. § 10131(b)(1) and most recently reiterated in President Obama's BRC.

C. The Failure of the Repository Program

1. The first failed efforts.

In 1957-1958, the U.S. Atomic Energy Commission (AEC) conducted the first site specific study of the disposal of high-level radioactive waste in geologic salt formations at Hutchinson, Kansas. Between 1961 and 1963, the AEC conducted experiments at the Carey salt mine at Lyons, Kansas. In 1970 the AEC, along with the Kansas governor, announced tentative selection of the Carey salt mine for a demonstration high-level waste repository. Opposition, primarily by the Kansas Geological Survey, concerns over conditions in the mine, the presence of numerous oil and gas wells in the vicinity, and the fact that there was solution mining at an operating adjacent salt mine operated by American Salt Company forced the AEC to abandoned the site by 1972.

Following the demise of the Lyons repository effort, the AEC announced in 1972 that it intended to develop a 100-year Retrievable Surface Storage Facility (RSSF). This proposal was opposed by the EPA and others because in their view it would divert attention and resources from efforts to find a permanent means of geologic disposal. As a consequence of this opposition, the Energy Research and Development Agency (ERDA) gave up its plans for a RSSF in 1975. Between 1975 and 1982, ERDA and the DOE continued to search for potential repository sites in various rock types in the states of Michigan, Ohio, New York, Utah, Texas, Louisiana, Mississippi, Washington, and Nevada. Various degrees of resistance from state and local representatives, combined with geological and technical problems, stalled these efforts to find a repository site. In 1976 President Gerald Ford halted the reprocessing of commercial nuclear fuel. In the following year President Jimmy Carter reinforced the government's ban on commercial reprocessing, and tried to halt the development of commercial breeder reactor development. These actions reinforced the need for prompt development of a geologic repository. While in

⁷ National Academy of Sciences, *The Disposal of Radioactive Waste on Land, Report of the Committee on Waste Disposal of the Division of Earth Sciences* (Washington. D.C. 1957).

1977 ERDA also announced that it would accept custody of commercial spent fuel and store it at Away From Reactor (AFR) storage facilities, this never happened.

2. The IRG Process

By the mid-1970s it had become clear that commercial spent fuel reprocessing was uneconomical, environmentally unsound, and represented a serious proliferation risk. President Gerald Ford refused to subsidize the completion of the Barnwell reprocessing plant, and then President Jimmy Carter pulled the plug on reprocessing. These actions by Presidents Ford and Carter gave a new urgency to finding a site suitable for geologic disposal of both spent fuel and high-level radioactive waste. In the late 1970s President Carter initiated an Interagency Review Group (IRG) process to try to solve once and for all the nuclear waste problem in the United States. The IRG process involved numerous scientists, extensive public involvement, and a consultation and concurrence role for the states. The outcome of the IRG effort was a two-track program. The DOE was tasked with the responsibility for identifying the best repository sites in the country, and the EPA and the NRC were tasked with developing nuclear waste disposal criteria against which the selection and development of the final repository sites would be judged.

3. The Nuclear Waste Policy Act (NWSA)

In 1982, Congress enacted the NWSA, which embodied in law the principal recommendations that grew out of the IRG process, including a commitment to geologic disposal, two repositories, and characterization of three sites before final selection of the first repository. The NWSA established a comprehensive program for the disposal of spent nuclear fuel and high-level radioactive waste (HLW) from the nation's commercial reactors and nuclear weapons complex. At the time the NWSA was passed nearly 25 years ago, the site selection and development process proposed by the IRG enjoyed fairly widespread support from within the Congress, the environmental community and state governments. By contrast, at this time the U.S. Government has little, if any, support from the State of Nevada, and virtually no public support from the environment and public health community for the now abandoned Yucca Mountain project.

4. What else went wrong?

Over the last twenty years, a substantial segment of the environmental community has arrived at the judgment that the process of developing, licensing, and setting environmental and oversight standards for the proposed repository has been, and continues to be, rigged or dramatically weakened to ensure that the site can be licensed, rather than provide for safety over the length of time that the waste remains dangerous to public health and the environment. How the Yucca Mountain site was selected and how the environmental standards were set are examples that illustrate this perspective.

a. Site Selection

First, DOE and then the Congress corrupted the site selection process within the NWSA. The original strategy contemplated DOE choosing the best four or five geologic media, then selecting a best candidate site in each media alternative, then narrowing the choices to the best three

alternatives, and finally picking a preferred site for the first of two repositories. However site selection guidelines were strongly criticized as DOE was accused of selecting sites that they had previously planned to pick. In May of 1986 DOE announced that it was abandoning a search for a second repository, and it had narrowed the candidate sites from nine to three, leaving in the mix the Hanford Reservation in Washington (in basalt), Deaf Smith Co., Texas (in bedded salt), and Yucca Mountain in Nevada (in unsaturated volcanic tuff). All equity in the site selection process was lost in 1987, when the Congress, confronted with a potentially huge cost of characterizing three sites, amended the NHPA of 1982, directing DOE to abandon the two-repository strategy and to develop only the Yucca Mountain site. At the time, Yucca Mountain was DOE's preferred site. The abandonment of the NHPA site selection process led directly to the loss of support from the State of Nevada, diminished Congressional support (except to ensure that the proposed Yucca site remains the sole site), and less meaningful public support for the Yucca Mountain project. The situation with respect to Yucca Mountain has only deteriorated since that time.

b. Radiation Standards

Radiation standards, the second track of the NHPA process has, if possible, fared worse. Section 121 of the NHPA of 1982 directs EPA to establish generally applicable standards to protect the general environment from offsite releases from radioactive materials in repositories, and directs the NRC to issue technical requirements and criteria. Unfortunately, it has been clear for years that the projected failures of the geologic isolation at Yucca Mountain are the determining factor in EPA's standards. EPA repeatedly issued standards that are concerned more with licensing the site than establishing protective standards. EPA's original 1985 standards were vacated in part because the EPA had failed to fulfill its separate duty under the Safe Drinking Water Act, 42 U.S.C. §300h, to assure that underground sources of water will not be "endangered" by any underground injection. *Natural Resources Defense Council v. Environmental Protection Agency* (NRDC v. EPA), 824 F.2d 1258 (1st Cir. 1987).

EPA's second attempt to at setting standards that allow for a projected failure of geological isolation was again vacated, this time by the United States Court of Appeals for the D.C. Circuit. The D.C. Circuit found that EPA's Yucca Mountain rule (and the corresponding NRC standard), which ended its period required compliance with the terms of those rules at 10,000 years was not "based upon or consistent with" the recommendations of the National Academy of Sciences ("NAS") as required by the 1992 Energy Policy Act and therefore must be vacated. *Nuclear Energy Institute, Inc. v. EPA*, 373 F.3d 1251 (2004). Giving significant deference to the agency, the D.C. Circuit did not vacate EPA's strangely configured compliance boundary for the Yucca Mountain site. See this map of EPA's compliance boundary, NRDC Attachment A, at the end of the document.

Inside the oddly drawn line, the repository need not protect water quality and radiation can leak in any amount). The dramatically irregular line that represents the point of compliance has little precedent in the realm of environmental protection, and its shape is perhaps more reminiscent of gerrymandered political districts. Rather than promulgate protective groundwater standards, EPA pieced together a "controlled area" that both anticipates and allows for a plume of radioactive contamination that will spread several miles from the repository toward existing farming

communities that depend solely on groundwater and perhaps through future communities closer to the site.

EPA's next proposed and revised rule, issued in 2005, retained the 15 millirem/year and groundwater standards for the first 10,000 years, but then establishes a 350 millirem/year standard for the period after 10,000 years and does away with the groundwater standard entirely. This two-tiered standard failed to comply with the law and fails to protect public health, especially if the repository's engineered barriers were compromised earlier than DOE predicts. On October 15, 2008, EPA published the final version of its revised Yucca Mountain rule in the Federal Register ("2008 Yucca Mountain rule," 73 Fed. Reg. 61255-61289). The 2008 Yucca Mountain rule's two-tiered individual protection annual dose standard establishes an initial 15 millirem first-tier limit, but weakens that limit to 100 millirem in the period after 10,000 years, when EPA projects peak dose to occur. Again, peak dose could occur significantly earlier if engineered barriers fail earlier than DOE and EPA have projected.

In any event, the final status of EPA's most recent two-tiered rule remains fundamentally uncertain. In an action pending in the District of Columbia Circuit (*State of Nevada v. Environmental Protection Agency*, No. 08-1327, consolidated with No. 08-1345), Nevada has challenged EPA's 2008 Yucca Mountain rule as once again failing to honor EPA's statutory duty to protect public health and safety, and to proceed consistently with the National Academy of Science's recommendations.

5. Finding the Yucca Site Unworkable & President Obama's Blue Ribbon Commission

The rest of the history is well understood and many of the essential facts can be found in DOE's *Integrated Waste Management Consent Based Siting Handbook*, 2016. There, DOE succinctly describes the "controversy, cost escalation, and legal challenges, formal DOE recommendation of the Yucca Mountain site to the President" and the "President's recommendation of Yucca Mountain to Congress, and subsequent congressional approval of the site were delayed until 2002, four years past the date on which DOE was supposed to begin accepting waste." *Siting Handbook* at 6. Without elaboration, the Siting Handbook notes that in 2008 DOE submitted a license application to the NRC to construct a repository at Yucca Mountain and that the State of Nevada "strongly opposed each of these steps and the selection of the Yucca Mountain site itself remained highly controversial, with numerous legal and technical objections throughout the site evaluation and license application process. Similarly, efforts to site and develop federally managed interim storage facilities pending the availability of a disposal repository also encountered opposition at the state level and all were unsuccessful." *Id.*

Finally, in 2009, the Obama Administration made the decision that faced with intractable opposition, decades of litigation with the Nevada, that the Yucca Mountain project was unworkable. And as we noted at the outset, in 2010 DOE established the BRC which reaffirmed the need for a geologic repository and made several key recommendations, including "establishing a new entity to manage the U.S. nuclear waste program and using a consent based process to site future storage and disposal facilities." *Id.* at 7.

6. International Efforts

As of the date of these comments, there is no single operating geologic repository for nuclear waste anywhere in the world. The only existing and previously operating repository is the Waste Isolation Pilot Plant – a DOE developed and operated repository for defense generated transuranic waste – is currently closed after a fire and explosion in 2014. Countries around the world have made varying progress on repository development, with some nearing significant milestones, other President Obama's BRC examined several foreign efforts at siting nuclear waste repositories and even went so far as to send delegations to Finland, France, Japan, Russia, Sweden and the United Kingdom to learn about these countries' waste management programs. BRC Report 49-52 (*see also*, Chapter 6 and Appendix C). In 2012 the BRC wrote:

All of the countries the Commission studied provided useful insights for the U.S. program going forward. Sweden and Finland are furthest along in selecting and developing a repository site, while other countries—like France and Canada—have also made substantial progress (of these countries, Canada provides perhaps the closest analogue to the United States in terms of political structure). In addition, Spain recently selected a site for a consolidated storage facility. Overall, the experience of these countries provides strong support for the Commission's conclusion that a transparent, consent-based approach built on a solid understanding of societal values has the best odds of achieving success in siting, constructing, and operating key waste management facilities. *Id.* (citations omitted).

Another source of more up to date information on the progress of other countries in their respective efforts to site and develop nuclear waste repositories can be found online as part of Stanford University's *Reset of U.S. Nuclear Waste Management Strategy and Policy Series*. See <http://cisac.fsi.stanford.edu/research/nuclear-waste-reset-initiative>. A wide range of materials both domestic focused and internationally focused can be found online, shared by the Project at https://drive.google.com/folderview?id=0B4IudW22FyDIa0g5c2t1NVBpdGc&usp=drive_web.

One significant nuclear country that did not receive significant attention during the BRC process was South Korea. South Korea, like every other nation, has not sited, developed, or commenced operation of a geologic repository, but there are useful observations for these comments.

First, South Korea's first power reactor at Kori started generating electricity in 1978. As of July 2016, there were in operation 25 power reactors with a total capacity of 24.5 GWe, 7.0 GWe under construction, and additional capacity planned that would bring South Korea's total nuclear generating capacity up to 42.7 GWe by 2035. All of these reactors are pressurized water reactors except for four CANDU heavy water reactors with a combined capacity of 2.8 GWe at the Wolsong nuclear power plant.

Just as the rest of the world, South Korea has a history of failure in siting a central interim spent fuel storage facility and a repository. This failure commenced in 1986, when the Atomic Energy Act was revised and the Ministry of Science and Technology (then known as MOST) and KAERI were assigned responsibility for radioactive waste management. Between 1986 and 1996, they made five attempts to acquire a single site for hosting both low- and intermediate-

level waste disposal and central interim spent fuel storage facilities. All attempts failed, however, due to strong local resistance. In 1996, this series of failures resulted in MOST and KAERI ceding the responsibility for radioactive waste management to what is now known as the Ministry of Knowledge and Economy (MKE) and the Korea Electric Power Corporation (KEPCO). In September 1998, the Atomic Energy Commission (AEC), South Korea's highest policy-making body for nuclear power, announced a "Radioactive Waste Management Plan" in which a waste disposal facility would be built by 2008 and a nearby central interim spent fuel storage facility would be built by 2016. The plan required that spent fuel be stored on the reactor sites until 2016.

There were four additional failures. In June 2000, the central government increased the financial incentive to 300 billion Won (\$270 million) and invited bids from local communities to host a low or intermediate level waste disposal site. Seven regions along the east and west coasts indicated interest, but following internal debates over the costs and benefits, none of them applied. In August 2001, the central government returned to its original approach: selection first and discussion later. In December 2002, the AEC announced four candidate sites, including Ulchin, Yonggwang, Kochang and Youngduk along the east and west coasts. The announcement was greeted by simultaneous protest demonstrations in all four regions. In April 2003, the government increased the incentive by offering a research center with a proton accelerator and offering to move the headquarters of KHNP to the host community. Eighty percent of the population of Pooan on the west coast signed a petition in favor of hosting the site but large-scale opposition developed. A joint conference was held in November 2003 to resolve the issue but collapsed in dissension. And finally, in April 2004, the government attempted for the first time to launch a public discussion of the costs and benefits of a national radioactive waste site but the subject was poorly defined and public acceptance was not increased. In March 2005, the central government promised that the local government that hosted the waste disposal facility would not be asked to also host a central interim spent fuel storage facility.

Indeed, it's apparent to NRDC that just as it is around the world, choosing a South Korean site for storage (and ultimate disposal) of the high-level radioactive waste produced by nuclear power plants will depend in some significant part on winning over the communities that live near that site (as noted above, it's not clear to us whether South Korea has the same regional challenges the United States faces as a federal polity). Obtaining such agreement would be difficult in any circumstance; because, just as here in the United States, there are complex webs of conflicting interests among concerned parties in politicized spent fuel public process. Consequently, and just as it is elsewhere, creating a public consensus on storage siting is difficult. Indeed, NRDC has been struck by the similarities in some of the flaws that have disrupted both the technical process and efforts at gaining public acceptance. For example, our own Dr. Kang has related stories of educational information ostensibly provided to local communities by experts associated with the government that were, to put it mildly, less than accurate. Just as we've found domestically, truly independent experts can be an effective way to impart meaningful understanding of the spent fuel storage situation. Such independent experts would not address the relative sources of power and decision-making NRDC believes necessary to reach a true, consent based process that gains full public acceptance, but it's a critical and foundational step.

More specifically, a main reason for the past siting failures in South Korea, according to Dr. Kang, was the government's secret selection process in which it selected sites based on its own technological assessments. The process inevitably floundered in the face of local, strong opposition. Dr. Kang describes this familiar history as the "Decide, Announce, Defend, and Abandon" (DADA) process that has played out in other countries, including the United Kingdom and the United States. The ongoing consultative process with local governments that includes a local veto, independent experts, and joint fact finding that is currently underway in Sweden and Finland is instructive and, while not necessarily an analogue to the federal system of states in America, gives credence to the idea that a consent based process is the only viable way to site a nuclear waste repository.

D. The Current Status of Nuclear Waste Management & Disposal

The current status of the repository can best be described as a stalemate. The Obama Administration long ago decided that the project is unworkable and implemented the BRC process to start the way down another – consent based – road. Such a path will, however, take legislation and altering the existing NWPA. Further, it's unclear how the impending Presidential election in November 2016 will, or will not, alter that decision. Whatever the course taken by a new Administration, the current Senate & House Majority have made their intentions clear – that they intend to pursue the Yucca Mountain project.⁸ And the industry has also made its intentions clear with respect to the abandoned Yucca Project – that no matter Nevada's clear position of non-consent to the project in any form or fashion, the licensing of the site must proceed.⁹

Just as pertinent to these stated positions, over the past two years the NRC has issued two new volumes of its Safety Evaluation Report (SER) and its favorable conclusion that the Yucca Mountain repository could proceed to a licensing hearing. And again, as DOE described in its Siting Handbook, "[w]hile the review concluded that DOE had successfully demonstrated the proposed repository would meet all applicable technical performance requirements, staff did not recommend issuance of a construction authorization because of outstanding issues related to land withdrawal and water rights. Specifically, congressional action would be needed to give DOE the requisite ownership and control of land needed for the repository. In addition, DOE would need water rights from the State of Nevada." *Siting Handbook* at 7. We agree with DOE's conclusion that the "challenges posed by Nevada's opposition to the selection of the Yucca Mountain site remain, underscoring the need for an initiative that relies on a consent-based process to gain acceptance for a repository site at local, state, and tribal levels." *Id.*

And thus, all parties and the process for managing and disposing of nuclear waste are at an impasse. We noted at the outset that restarting the Yucca Mountain process would be at best

⁸ See, e.g., Statement of Representative Shimkus (R-IL), Chairman John Shimkus' Opening Statement Subcommittee on Environment and the Economy, "Federal, State, and Local Agreements and Economic Benefits for Spent Nuclear Fuel Disposal," 10:00 a.m., July 7, 2016; found online at <http://docs.house.gov/meetings/IF/IF18/20160707/105164/HHRG-114-IF18-MState-S000364-20160707.pdf>

⁹ See e.g., Nuclear Energy Institutes *Issues & Policy, Nuclear Waste Management*, "The industry supports the completion of the Nuclear Regulatory Commission's review of the DOE license application to build a repository at Yucca Mountain, Nevada; found online at <http://www.nei.org/Issues-Policy/Nuclear-Waste-Management>.

problematic and likely waylay the process of developing a repository for years, if not forever. We'll now take the opportunity to briefly elaborate why this is the case. First, without remotely straying into hyperbole, there are *dozens* of issues likely to be litigated at enormous length. One in particular is premised entirely on DOE's design for titanium drip shields that are supposed to sit over each of the thousands of waste canisters in Yucca Mountain's underground tunnels to keep out corroding water. Although DOE included the drip shields as part of the repository design, and NRC has accepted them for license-review purposes, there is no plan to design, license, pay for, and much less install the shields until at least 100 years after the waste goes in. This unacceptable state of affairs is detailed by former NRC Commissioner Victor Gilinsky.¹⁰ Quite simply, Yucca's likely repository configuration doesn't come close to meeting NRC requirements.

This and other issues are anticipated to be vigorously litigated by the State of Nevada, which has filed more than 300 contentions challenging DOE's license application for Yucca Mountain. To put such a hearing process in perspective, NRDC recently concluded five years of a NRC licensing proceeding where not one party – not industry seeking the license, not NRC Staff, nor the environmental intervenors – had any interest or took any steps to functionally prolong or delay the proceeding beyond the rare extension of a short period of time for filing a pleading (something all parties found appropriate and necessary at various points).¹¹ And in the more than five years of this proceeding, *only three contentions* were fully litigated on their merits, not the more than 300 likely to be litigated for the Yucca license if the process were commenced. Any suggestion the Yucca licensing proceeding could easily restart and quickly move to a successful conclusion for permanent disposal is simply a fallacy. And when that inevitable litigation rightly waylays yet another effort at nuclear waste disposal, the damage to the nation's prospects to ever developing a repository may be permanent.

E. Status of the BRC Recommendations – the Trajectory of Senate Nuclear Waste Legislation

The BRC was issued in January, 2012 and Congress began work on responding to the document that Spring. Two Senate committees lay claim to jurisdiction over the topics and the Senate Environment & Public Works Committee held the first hearing on the BRC Recommendations in June of 2012.¹²

Senate Energy & Natural Resources Committee Chairman Bingaman (D-NM) was the first to put pen to paper and drafted the S. 3469, the first legislative presentation of the BRC

¹⁰ See *Yucca Mountain Redux*, Victor Gilinsky, Bulletin of the Atomic Scientist, November 5, 2014 (accessed July 29, 2016) <http://thebulletin.org/yucca-mountain-redux7800>.

¹¹ *In the Matter of Strata Energy, Inc.*, (Ross In Situ Recovery Uranium Project), Docket No. 40-9091-MLA, ASLBP No. 12-915-01-MLA.

¹² See NRDC's June 7, 2012, statement before the Committee on Environment and Public Works, Subcommittee on Clean Air and Nuclear Safety, United States Senate, http://www.epw.senate.gov/public/_cache/files/d1af1f37-aa54-4266-80ae-d7997614792b/6712hearingwitness testimonyfettus.pdf.

recommendations. On September 12, 2012, NRDC testified before the Senate Energy & Natural Resources Committee on S. 3469, the template for S. 1240, and its current iteration, S. 854.¹³ In 2012 we commended S. 3469's adherence to three principles that, in our view, must be complied with if America is ever to develop an adequate, safe solution for nuclear waste – (1) radioactive waste from the nation's commercial nuclear power plants and nuclear weapons program must be buried in technically sound deep geologic repositories, in which the waste will be permanently isolated from the human and natural environments; (2) governing legislation must contain a strong link between developing waste storage facilities and establishing final deep geologic repositories that ensures no “temporary” storage facility becomes a permanent one; and (3) nuclear waste legislation must embody the fundamental concept that the polluter pays the bill for the contamination that the polluter creates.

Unfortunately, the trajectory of legislation in the Senate has been negative, and we opposed 2013's S. 1240 (and thus, the more recent S. 854) because the bill: 1) severs the crucial link between storage and disposal; 2) places highest priority on establishing a Federal interim storage facility at the expense of getting the geologic repository program back on track; 3) fails to ensure that adequate geologic repository standards will be in place before the search for candidate geologic repositories sites commences; 4) fails to provide states with adequate regulatory authority over radiation-related health and safety issues associated with nuclear waste facilities in their respective states; and 5) fails to prohibit the Administrator (or Board) of a new federal entity overseeing nuclear waste management from using funds to engage in, or support spent fuel reprocessing (chemical or metallurgical).

In short, and regrettably, it appears that the authors of S. 1240/S. 854 have rejected several key recommendations of the BRC. The bill wrongly prioritizes the narrow aim of getting a government-run interim spent fuel storage facility up and running as soon as possible – a priority with potential financial benefits for business interests. However, as NRDC noted to the Senate in our testimony in 2013, we do believe a legislative process on nuclear waste management is salvageable with the prescriptions we outline in Section IV, and we look forward to engaging in constructive efforts.

F. Consolidated Storage & Other Efforts

Also ahead is the looming debate over consolidated storage. Just to focus on one of the potential sites, the Waste Control Specialists (WCS) corporation is seeking to establish “interim” storage site for the nation's commercial spent nuclear fuel at its existing “low-level” radioactive and hazardous waste site in Andrews County, Texas, just across the border from New Mexico's defense waste transuranic repository, the Waste Isolation Pilot Plant (WIPP) and even closer to Urenco's uranium enrichment plant, officially in Eunice, NM. WCS submitted a license application to the NRC in April 2016, and it is currently under NRC review. In essence, the WCS proposal is to site a dry storage facility containing transport casks containing high-level radioactive waste from reactors across the country. WCS suggests this “interim” site would exist

¹³ NRDC's testimonies, delivered in 2012 and 2013 to the Senate E&NR Committee, can be found online at http://www.energy.senate.gov/public/index.cfm/hearings-and-business-meetings?Id=228fe2e8-8c9e-4440-b266-1d3885c3fa93&Statement_id=68e04fd7-ad48-4d91-b67f-e3e7c789471b; and <http://www.nrdc.org/nuclear/gfettus-13073001.asp>.

for 60 years, after which the waste could then be moved again to some permanent repository that not only doesn't yet exist, but there isn't even a plan to get there.

There are several problems with this proposal. First, and most obviously from NRDC's perspective, immediately going forward with a consolidated storage proposal before working out the details of a comprehensive legislative path for nuclear waste storage and disposal (and connecting the licensing of storage to the licensing of a permanent repository) entirely severs the link between storage and disposal, and creates an overwhelming risk that a storage site will function as de facto final resting place for nuclear waste. Or, in the alternative and also just as damning, it sets up yet another attempt to ship the waste to Yucca Mountain or even open up New Mexico's WIPP facility for spent nuclear fuel disposal— a site designed and intended for nuclear waste with trace levels of plutonium, not spent fuel (that has already blown plutonium throughout the underground and into the environment, contaminating 22 workers, and is functionally inoperable for years).¹⁴ All of this runs precisely counter to the BRC's admonition that "consent" come first – a potentially ironic turn after decades of promises were delivered to New Mexico that it would never be asked to turn WIPP into a commercial nuclear waste repository.

And that's the beginning of the problems of moving forward with consolidated storage before Congress sets out a comprehensive plan. Others are more practical in nature. In contrast to the defunct Private Fuel Storage (PFS) site proposed in Utah, which actually obtained a NRC license even though nearly every single major Republican office-holder in the state objected to it, the WCS proposal isn't designed as a private site where WCS would negotiate with each nuclear utility to accept its waste. The PFS scheme failed in part because such a private site transfers no liability for the nuclear waste, thus no utility was interested in the retention of the liability— especially as the waste would have to be transported hundreds or thousands of miles. In this instance, as we understand it, WCS will be requesting DOE accept title to the waste and all liability and costs for transportation to Andrews County, Texas. And while WCS states that Andrews County supports the idea, it's not at all clear over the long term whether consensus will include more than the statement of a local governing body. Indeed, Texas and New Mexico will both need to be involved and already there are high-ranking objections from New Mexico. http://www.tomudall.senate.gov/?p=press_release&id=1947.

Objections have also been heard in both of the Dakotas regarding DOE's recent efforts to develop the science on a borehole disposal approach to some forms of nuclear waste. DOE's stated objectives include providing the technical basis for "fielding a demonstration project, defining the scientific research activities associated with site characterization and postclosure safety, as well as defining the engineering demonstration activities associated with deep borehole

¹⁴ On February 5, 2014 there was an underground fire at the WIPP facility, precipitating the evacuation of 86 workers underground at the time of the fire, with 13 workers treated for smoke inhalation (seven at the WIPP site and six at the Carlsbad Medical Center). Next, on the night of Friday, February 14, 2014 there was a significant release of radiation to the environment from the facility that has substantially contaminated the underground and affected the health of a number of WIPP employees. *See*, February 5, 2014, Fire - <http://www.wipp.energy.gov/Special/AIB%20Report.pdf>; *see also*, February 14, 2014 Radiological Release (Phase 1), -http://www.wipp.energy.gov/Special/AIB_Final_WIPP_Rad_Release_Phase1_04_22_2014.pdf.

drilling, completion, and surrogate waste canister emplacement.”¹⁵ DOE’s failure in these recent efforts could not have provided a better illustration for the need to achieve public acceptance before proceeding. Efforts at an initial site in North Dakota have already been abandoned after several communication failures and deep community mistrust.¹⁶ And in South Dakota a former Governor put it concisely: “North Dakota sent them on their way; we’d be happy to do the same thing ...I told them that if they want to divide communities and divide families and divide churches, keep it up, this will do it. We’ve had pig feedlot issues here that divided people so much they won’t sit in the same pew in church anymore.”¹⁷

In contrast to this history and the impasse that is the present, NRDC suggests a better way forward that could (1) restart the repository program after addressing the federalism flaw inherent in the NWPA and (2) commence a pilot program for consolidated storage that does not sever the link between storage and disposal.

IV. NRDC’s Prescriptions for Restarting and Forward Progress Towards Achieving Science-Based, Consent-Based Nuclear Waste Disposal Program

The BRC recognized that the 1987 amendments to the NWPA were “highly prescriptive” and “widely viewed as being driven too heavily by political consideration.” As detailed earlier, we believe that those observations by the BRC are insufficiently critical assessments, however they make a sound point that goes directly to the fundamental flaw in the NWPA and the current stalemate – at no point has Nevada consented to accept a potentially endless supply of nuclear waste and indeed, after the past two decades there is a vanishing likelihood the State, no matter the party in power, would ever would consent under any circumstances. So what to do?

NRDC recommends to DOE that it consider five straightforward steps to re-launch the U.S. nuclear waste disposal program in a manner that finally, once and for all, puts the country on a path to solve the extraordinary challenge of waste that is toxic and radioactive for millennia.

A. Five Recommendations to Get the Nuclear Waste Program Back on Track

NRDC urges both the Administration and Congress to – (1) recognize that repositories must remain the focus of any legislative effort; (2) create a coherent legal framework before commencing any geologic repository or interim storage site development process; (3) arrive at a consent-based approach for nuclear waste storage and disposal via a fundamental change in law; (4) address storage in a phased approach consistent with the careful architecture of former Senator Bingaman’s S. 3469 (introduced in 2012); and (5) exclude delaying, proliferation-

¹⁵ See, Energy Department’s *Research, Development, And Demonstration Roadmap For Deep Borehole Disposal*, found online at <http://www.energy.gov/ne/downloads/research-development-and-demonstration-roadmap-deep-borehole-disposal>.

¹⁶ See, *DOE Axes North Dakota Borehole Project*, Karl Herchenroeder, Exchange Monitor, March 4, 2016, accessed online July 29, 2016, <http://www.exchangemonitor.com/publication/exchange-monitor/doe-axes-north-dakota-borehole-project-2/>

¹⁷ See, *Borehole project surfaces in South Dakota*, Lauren Donovan, Bismarck Tribune, May 9, 2016, accessed online July 29, 2016, http://bismarcktribune.com/news/state-and-regional/borehole-project-surfaces-in-south-dakota/article_4927d4ed-1d29-5ff2-858e-6e44f754318c.html.

driving and polarizing closed fuel cycle and reprocessing options from this effort to implement the interim storage and ultimate disposal missions.

Importantly, our view on each area is premised on a single overarching caution: in order to avoid repeating the mistakes of the last three decades, Congress, as this must be legislated, must create a transparent, equitable process incorporating strong public health and environmental standards insulated from gerrymandering or other distortions in order to ensure, at the conclusion of the process, the licensing of a suitable site (or sites).

1. Recommendation 1 - Deep Geologic Repositories Are The Solution For Nuclear Waste And Must Remain the Focus

NRDC concurs with the recognition that our generation has ethical obligation to future generations regarding nuclear waste disposal. Adherence to the principle of deep geologic disposal as the solution to nuclear waste is consistent with more than 60 years of scientific consensus and the views of the BRC. No other solutions are technically, economically or morally viable over the long term, and NRDC strongly supports development of a science-based repository program that acknowledges the significant institutional challenges facing nuclear waste storage and disposal. Thus, in whatever consent based program DOE (or any other entity) commences in the new administration, we urge explicit adherence to the first purpose of the Nuclear Waste Policy Act (NWPA), 42 U.S.C. § 10131(b)(1), since the decision to isolate nuclear waste from the biosphere implicates critical issues of security, including: financial security, environmental protection, and public health.

2. Recommendation 2 – Create A Coherent Legal Framework That Ensures The “Polluter Pays” Before Commencing Any Repository Or Interim Storage Site Development.

To avoid repeating failures of past decades and consistent with BRC recommendations, both the standards for site screening and development criteria must be in final form before any sites are considered. Generic radiation and environmental protection standards must also be established prior to consideration of sites. To give this recommendation explicit and simple context, Senator Bingaman’s 2012 legislative effort (S.3469, specifically in Sections 304, 305 and 306) set in place some of the necessary structures that could avoid repeating the failure of the Yucca Mountain process. Specifically, the bill would have directed EPA to adopt, by rule, broadly applicable standards for the protection of the general environment from offsite releases from radioactive material in geologic repositories. The bill also directed NRC to then amend its regulations governing the licensing of geological repositories to be consistent with any relevant standard adopted by EPA. Further, embedded in Senator Bingaman’s bill was the requirement that the polluters pay the bill for the contamination created. This bipartisan concept has long history as bedrock American law and must remain in full force in any legislation.

These requirements and this phasing of agency actions in Senator Bingaman’s bill were appropriate (*i.e.*, first EPA sets the standards and then NRC ensures its licensing process meets those standards) – and in the next recommendation we’ll expand on how this coherent legal framework must be improved. But for the instant point, it’s key that a coherent legal framework be in place before siting decisions get made. Unfortunately, the subsequent iterations of nuclear

waste legislation have ignored this wise sequencing, thus ignoring BRC's recommendation that new, applicable rules be in *final* form before site selection.

It should also be clear to DOE that standards should be based on careful characterization of the radiation sources and resulting doses. The chief sources of radiation in high-level nuclear waste forms are the beta-decay of fission products like Cs-137 and Sr-90 and the alpha-decay of actinide elements like Uranium, Neptunium and Americium. Beta-decay is the primary source of radiation during the first 500 year of storage, as it originates from the shorter-lived fission products. The alpha-decay becomes dominant as a source after approximately 1000 years.

3. Recommendation 3 – Develop A Consent-Based Approach For Nuclear Waste Disposal Through A Fundamental Change In Law.

(a). Consent, Federalism, and a Fundamental Change In Law

(i) The Consent Based Statements of the BRC Are Inadequate To the Task.

For all its laudable qualities, we believe the 2012 BRC's report does not accurately portray, and certainly not set the path forward, the fundamental problem facing how to finally solve our nuclear waste disposal challenges. The BRC should have explicitly stated – and we do so here today – that Congress, with its firm understanding of federalism, should legislate a role for EPA and the states in nuclear waste disposal by amending the Atomic Energy Act (AEA) to remove its express exemptions of radioactive material from environmental laws.

Bluntly, the reasons we expounded upon at length in the pages above make it excruciatingly clear that state, local and tribal governments must be central in any prescription for a successful repository and waste storage program. Regrettably, current law has treated them as dispensable afterthoughts, preempted from any meaningful power and authority over radioactive waste disposal sites. And the current effort at draft legislation suffers the same malady.

Rather than address this problem head on, the BRC chose to carefully skirt the matter in its report, while still noting that federal and state tensions are often central in nuclear waste disputes. The BRC's Final Report states in pertinent part:

We recognize that defining a meaningful and appropriate role for states, tribes, and local governments under current law is far from straightforward, given that the Atomic Energy Act of 1954 provides for exclusive federal jurisdiction over many radioactive waste management issues. Nevertheless, we believe it will be essential to affirm a role for states, tribes, and local governments that is at once positive, proactive, and substantively meaningful and thereby reduces rather than increases the potential for conflict, confusion, and delay.

BRC Final Report at 56 (citation omitted).

The first (very long) sentence both makes an observation and states a fact. The observation is that defining a meaningful and appropriate role for states, tribes, and local governments under

current law is far from straightforward. The fact is that the Atomic Energy Act of 1954 provides for exclusive federal jurisdiction over many radioactive waste management issues. According to the BRC, the difficulty of defining a meaningful and appropriate role for states is a “given” because of the fact of exclusive federal jurisdiction.

So what does the BRC suggest relevant decision makers such as the Administration or Congress do about this? Do away with the explicit federal jurisdiction? Increase the exclusivity of the federal jurisdiction? Somehow argue that the problems can be addressed without altering the exclusive federal jurisdiction in some fashion? There is nothing so clear or direct in the text. Rather, the BRC’s very next sentence is simply an aspiration, without any explicit recommendation addressing the “given” (*i.e.*, exclusive federal jurisdiction) that makes the process so difficult. The BRC simply noted that it is “essential to affirm a role for states, tribes, and local governments that is at once positive, proactive, and substantively meaningful.” NRDC agrees with the aspiration, thinks it’s a nice thing to write, but plainly the BRC missed an important opportunity to address the fundamental roadblock to solving our nuclear waste problem.

Without fundamental changes in our current, non-consent based law that explicitly address what the BRC termed, “federal, state and tribal tensions,” we will never approach closure and consent on transparent, phased, and adaptive decisions for nuclear waste siting. We now explore in more detail this decades-overdue change in the law.

(ii) NRDC’s Prescription for Ensuring States’ Authority – Remove the AEA’s Exemptions from Environmental Law

As we stated at the outset (*supra* at 4-5), a meaningful and appropriate role for states in nuclear waste storage and disposal siting can be accomplished in a straightforward manner by amending the AEA to remove its express exemptions of radioactive material from environmental laws. The exemptions of radioactivity make it, in effect, a privileged pollutant. Exemptions from the Clean Water Act and the Resource Conservation and Recovery Act (RCRA) are at the foundation of state and, we submit, even fellow federal agency distrust of both commercial and government-run nuclear complexes. Such an act would make the treatment of radioactive waste consistent with every other bedrock environmental law.¹⁸

As DOE is aware, most federal environmental laws expressly exclude “source, special nuclear and byproduct material” from the scope of health, safety and environmental regulation by EPA or the states, leaving the field to DOE and NRC. In the absence of clear language in those

¹⁸ We initially described the federalist intention at the heart of environmental statutes and reiterate it here. Nearly every environmental law provides for state assumption of its authorities, and certainly the central protections for land, water and air (Clean Water Act, Clean Air Act, and Resource Conservation & Recovery Act (RCRA)) do so. Once that authority is assumed, those states must meet minimum federal standards and the federal government retains independent oversight and enforcement authority. And generally, depending on state law, those delegated states can impose stricter requirements or different regulatory mandates. We suggest no departure from these norms. Nuclear waste should be no different under environmental law, but under the AEA and the NWPA, it is.

statutes authorizing EPA (or states where appropriate) to regulate the environmental and public health impacts of radioactive waste, DOE retains broad authority over its vast amounts of radioactive waste, with EPA and state regulators then only able to push for stringent cleanups on the margins of the process. Indeed, the BRC Report discusses the State of New Mexico's efforts to regulate aspects of the Waste Isolation Pilot Plant under RCRA as critical positive element in the development of the currently active site (BRC Final Report at 21). The NRC also retains far reaching safety and environmental regulatory authority over commercial nuclear facilities, with agreement states able to assume NRC authority, but only on the federal agency's terms.

States are welcome to consult with NRC and DOE, but the agencies can, and will, assert preemptive authority where they see fit.¹⁹ This has happened time and again at both commercial and DOE nuclear facilities. This outdated regulatory scheme is the focal point of the distrust that has poisoned federal and state relationships involved in managing and disposing of HLW and spent nuclear fuel, with resulting significant impacts on public health and the environment.

If EPA and the states had full legal authority and could treat radionuclides as they do other pollutants under environmental law, clear cleanup standards could be promulgated, and the Nation could be much farther along in remediating the toxic legacy of the Cold War. Further, we could likely avoid some of the ongoing legal and regulatory disputes over operations at commercial nuclear facilities. *See, e.g.,* Att. B. Any regulatory change of this magnitude would have to be harmonized with appropriate NRC licensing jurisdiction over facilities and waste and harmonized with EPA's existing jurisdiction with respect to radiation standards: but such a process is certainly within the capacity of the current federal agencies and engaged stakeholders. Some states would assume regulatory jurisdiction over radioactive material as delegated programs under the Clean Water Act or RCRA, others might not. But in any event, substantially improved clarity in the regulatory structure and a meaningful state oversight role would allow, for the first time in this country, consent-based and transparent decisions to take place on the matter of developing storage sites and geologic repositories.

We close this recommendation with a brief discussion of Section 306 of the 2013 nuclear waste bill, which suggested a consent agreement with terms and conditions including "regulatory oversight authority," focused on a singular host state that intended to grant consent. As we observed then, the attempt to remedy regulatory deficiencies could be more simply and effectively handled by ending exemptions under the AEA. Providing some statutory cover for regulatory oversight authority and even removing the ability of the United States to unilaterally break the terms of the consent agreement could potentially give a state some measure of comfort that the agreement it had painstakingly negotiated over "undue burdens" or conflicting compliance agreements will hold fast. But there would be nothing stopping Congress from revisiting this law, ratifying the consent agreement with conditions that functionally remove that oversight authority, and thereby removing whatever meaningful restraint a state might assert. Thus, ultimately what is offered as a thoughtful contract provision a state could negotiate, could

¹⁹ *See* Att. B, the 2010 exchange of letters between NRDC, Greenpeace, Union of Concerned Scientists, Beyond Nuclear, Riverkeepers and Eastern Environmental Law Center and NRC regarding federal preemption and groundwater protection.

quickly and easily by any future Congress be rendered inoperable and thereby eviscerate a state's protection against altered, less favorable terms – and we'd be right back where we started.

In short, ending the anachronistic AEA exemptions solves the matter of opportunity for meaningful state oversight over nuclear waste and does not carry with it substantial likelihood of congressional terms and modifications exacted from states years into a good faith negotiation on a site. Indeed, while it would be theoretically possible for a future Congress to revisit the AEA and re-insert exemptions from environmental law, it would have to do so in a manner that would remove overdue jurisdictional authority from all states (or Congress would have to single out one state for special treatment). The difficulty of prevailing over the interest of all 50 states rather than simply amending legislation that affects the interests of just one state should be apparent. It is past time to normalize nuclear waste with the rest of environmental law and NRDC sees this as the key to developing a durable consent based approach.

4. Recommendation 4 – Address Storage In A Phased Approach Consistent With The Careful Architecture Of S. 3469.

Efforts to initiate a temporary storage facility – that are now, unfortunately, picking up speed – must be inextricably linked with development of a permanent solution. This linkage, which is a crucial guard against a “temporary” storage facility becoming a permanent one, should guide the legislative process. Consistent with the BRC's findings, a case can only be made for interim storage if it is an integral part of the repository program and not as an alternative to, or de facto substitute for, permanent disposal.

Rather than prematurely bypassing a careful process that can arrive at protective, environmentally sensible and scientifically defensible solutions, NRDC urges spent fuel storage efforts to focus on vigorous efforts by industry and by appropriate regulatory authorities to ensure that all near-term forms of storage meet high standards of safety and security for the decades-long time periods that interim storage sites will be in use. While NRDC can agree with the overall concept of consolidated interim storage for a measured amount of spent fuel that meets strong safety criteria (moving fuel from seismically active areas, for example) and removing the stranded fuel from decommissioned plants, we can only do so after the introduction of a phased approach, as the general architecture of Senator Bingaman's 2012 bill suggests, but is unfortunately dispensed with in current iterations before the Senate.

The only situation where NRDC sees merit in a pilot project(s) is to address the current total stranded spent fuel at the closed reactor sites, accommodated in a hardened building at one or more of the currently operating commercial reactor sites that follows the example of the Ahaus facility in Germany. These potential volunteer sites – operating commercial reactors – have already demonstrated “consent” by hosting spent nuclear fuel for years or decades. Far less of the massive funding that would be necessary in the way of new infrastructure would be required and the capacity for fuel management and transportation is already in place, along with consent necessary for hosting nuclear facilities in the first instance.

5. Recommendation 5 – Exclude Unsafe, Uneconomic Closed Fuel Cycle And Reprocessing Options From This Effort.

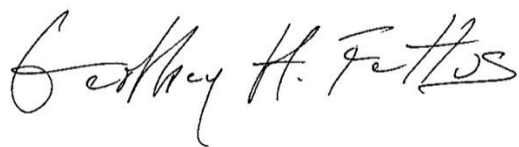
Both the BRC Recommendations and Senator Bingaman’s 2012 bill and for the most part its progeny have wisely resisted inclusion of support for reprocessing, fast reactors, or other closed fuel cycle options. We see no reason to belabor the point and simply note that consistent with BRC Findings, there are “no currently available or reasonably foreseeable” alternatives to deep geologic disposal. As Senator Bingaman noted, “even if we were to reprocess spent fuel, with all of the costs and environmental issues it involves, we would still need to dispose of the radioactive waste streams that reprocessing itself produces and we would need to do so in a deep geologic repository.” At no point should this evolving process include support for closed fuel cycle options.

V. Conclusion

The history of the federal nuclear waste program has been dismal. But decades from now others will face the precise predicament we find ourselves in today if Congress or a new Administration tries to ram through unworkable solutions contentiously opposed by States, lacking a sound legal and scientific foundation, and devoid of public acceptance and consent. Efforts to quickly restart the abandoned Yucca Mountain project or fast track an interim storage facility will either not work or lead to more contentious disputes and a derailing of the effort to find a final disposal site. Unless Congress fundamentally revamps how nuclear waste is regulated and allows for meaningful State oversight by amending the AEA to remove its express exemptions of radioactive material from environmental laws, we’re doomed to repeat this dismal cycle until a future Congress and Administration get it right.

We appreciate the opportunity to comment. If you have any questions, please do not hesitate to contact us.

Sincerely,



Geoffrey H. Fettus
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[REDACTED]



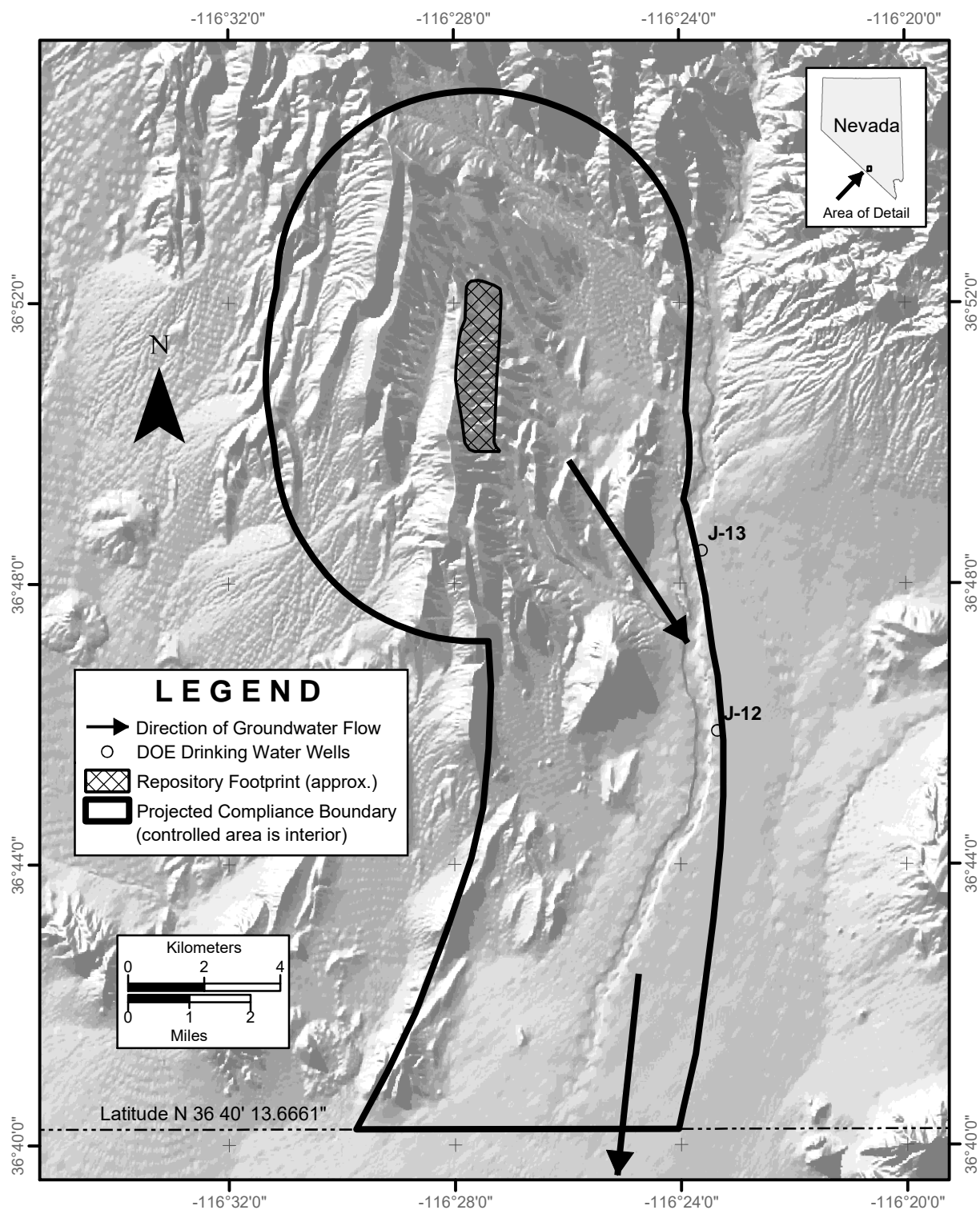
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Projected Groundwater Standards Compliance Boundary for Spread of Radioactive Contamination at the Yucca Mountain Project

Measurement of Radioactive Contamination Takes Place Outside of Controlled Area



NRDC produced this visual representation from the following information:

"The controlled area may extend no more than 5 km in any direction from the repository footprint, except in the direction of groundwater flow. In the direction of groundwater flow, the controlled area may extend no farther south than latitude 36 40' 13.6661" North ... [T]he size of the controlled area may not exceed 300 square km." 66 Fed Reg. at 32117 (June 13, 2001). The direction of groundwater flow is from FEIS (February 2002) at 5-21, Figure 5-3. The repository footprint is from the Yucca Mountain Science and Engineering Report, DOE/RW-0539, at 1-17, Figure 1-3, and the area is approximately 4.27 square km. The area within the projected compliance boundary, as shown in this map, is about 230 square km. The relief image was created from a 1 arc-second Digital Elevation Model from the USGS National Elevation Dataset, April 2002. This map is based on a Nevada State Plane Central projection, North American Datum 1927.



May 25, 2010

Chairman Gregory B. Jaczko
Commissioner George Apostolakis
Commissioner William D. Magwood, IV
Commissioner William C. Ostendorff
Commissioner Kristine L. Svinicki

Dear Chairman Jaczko & Commissioners

On April 20th, the U.S. Nuclear Regulatory Commission (NRC) held a meeting seeking public input into the NRC's handling of groundwater contamination at nuclear reactor sites across the United States.

During the meeting, it was brought to our attention that on July 5, 2006, the NRC's Office of General Counsel (OGC) issued a letter to the Illinois Attorney General threatening to intervene in Illinois v Exelon Corp., No. 06 MR 248 (Will County Court) (Attached). The NRC's OGC wrote that, "if the lawsuit moves forward one option for us is to seek leave to participate in the lawsuit to raise the Commission's preemption concerns."

Today we seek further clarification regarding the NRC's intent with respect to similar situations. In situations where States find that their drinking water resources are being affected by inadvertent discharges from licensed nuclear facilities, we hope that the NRC already recognizes that States have an obligation to protect their citizens that is not preempted by the Atomic Energy Act. Although we are gratified that recent comments by the NRC in the press have recognized the "states have a role to play" in such situations, this is somewhat vague. Please confirm in writing that the NRC recognizes that it is both legal and appropriate for the States to take action against licensees when drinking water is under threat.

This recognition of State powers in this area would not deprive the NRC of the means to regulate such situations. Congress has made it clear that the specific language of the AEA expressly prohibits the NRC from licensing source, special nuclear, or byproduct materials if the operation “would be inimical to the common defense and security or the health and safety of the public.” 42 USC § 2099; 42 USC § 2034; and 42 USC § 2077(c)(2). Put simply, the NRC may not allow a nuclear facility to operate in an unsafe manner. We presume the Commission would agree with such a characterization of its obligations and takes a broad view of those powers. We also presume the Commission is equally troubled that there have been dozens of instances in the recent past of contaminated groundwater at licensed NRC reactor facilities. If the Commission had been taking sufficient action pursuant to these powers, we believe States would not have felt an obligation to intervene. We believe that the recent trend of increasing State involvement with nuclear facilities can be traced to a lack of adequate action by the NRC.

Rather than enforcing regulations governing the unmonitored and uncontrolled release of radiation into groundwater, the NRC endorsed a voluntary industry initiative run by the industry’s trade association, the Nuclear Energy Institute. We think it is time for the Commission to take a different path. At the very least, we urge that the NRC should not try to handcuff states performing the work that the agency should have been doing in the first instance. Indeed, we think it notable and deserving of Congressional attention if the NRC were to exercise its preemptive authority on behalf of the nuclear industry in order to block state regulators from holding nuclear corporations accountable for the contamination of drinking water resources. Indeed, the NRC’s actions in the Illinois case referenced above clearly illustrate that clarification of the AEA’s apportionment of regulatory authority to protect important economic and environmental resources – such as a State’s vital interest in protecting its groundwater – is long overdue. We can assure you that any further attempts to handcuff state governments under the guise of federal preemption will precipitate greater controversy.

When drinking water is not under threat, the regulatory situation is less clear. The nuclear industry has already aggressively exploited this lack of regulatory clarity in what state regulators can and cannot do. And equally important, the industry finds comfort in the assurance that the NRC has, thus far, required little and even threatened to preempt those States that have the temerity to enforce requirements protective of public health and the environment.

This lack of regulatory clarity was illustrated at the April 20th meeting. Even the nuclear industry’s advocates admitted “[t]he plants did not have legal authorization to release radioactive material to groundwater.” But on the other hand, an industry advocate at the Morgan Lewis firm stated that while “(t)he Clean Water Act requires a permit to discharge any pollutant into a water of the United States,” he/she points out that “groundwater is NOT a water of the United States.” (Both presentations were provided to NRC by Greenpeace after the April

20th meeting but are still unavailable for public review in the NRC's publicly accessible ADAMS database.) Many states' laws prohibit unpermitted discharges of radioactive substances to groundwater, but the ability of the states to enforce these laws against licensed nuclear facilities has not been tested.

It is evident that the nuclear industry and its attorneys recognize that they lack the legal authority to release radiation or any pollutant into groundwater. We believe such action is clearly "inimical to the health and safety of the public." We are therefore dismayed that the NRC remains reluctant, at best, to act on such matters. Given the lack of NRC action in this area, the public is at a loss to understand why the NRC's OGC would countenance interference with State efforts to protect groundwater.

As a result of the groundwater contamination issues at dozens of operating nuclear reactor sites across the country, NRC's credibility as a regulator of the public health and safety has been called into question. Since the NRC has chosen not to enforce its mandate to protect human health and safety with respect to the multiple groundwater contamination issues, we strongly urge the NRC to cease any attempts to preempt state governments from exercising their authority to protect important economic and environmental resources within their borders.

Sincerely,

Paul Gunter
Beyond Nuclear

Richard Webster
Eastern Environmental Law Center

Jim Riccio
Greenpeace

Geoffrey H. Fettus
Natural Resources Defense Council

Phillip Musegaas
Riverkeeper

Dave Lochbaum
Union of Concerned Scientists

CC: Senator Bernie Sanders, Senator Patrick Leahy, Senator Charles Schumer, Senator Kirsten Gillibrand, Senator Frank Lautenberg, Senator Robert Menendez, Congressman Edward J. Markey, Congressman John Adler, Congressman John Hall, Congressman Dennis Kucinich, Congressman Christopher H. Smith, Congressman Peter Welch



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

GENERAL COUNSEL

July 9, 2010

Jim Riccio
Nuclear Policy Analyst
Greenpeace
702 H Street NW, Suite 300
Washington, D.C. 20001

Dear Mr. Riccio:

A handwritten signature in dark ink, appearing to read "Jim Riccio", is written over the name in the salutation.

I am responding to your letter to the Commission of May 25, 2010, which suggests that the Office of the General Counsel (OGC) has attempted, "under the guise of federal preemption", to "handcuff state governments" in their efforts to protect groundwater. You were prompted to write this letter because it came to your attention during a public meeting the U.S. Nuclear Regulatory Commission (NRC) held recently that OGC had written to the office of the Illinois Attorney General four years ago to express OGC's concerns about actions the State was taking onsite at the Braidwood plant to protect groundwater from unplanned releases of tritium. You ask the agency to "confirm in writing that the NRC recognizes that it is both legal and appropriate for the States to take action against licensees when drinking water is under threat."

The NRC has certainly never denied that States have some authority over groundwater. There is, for example, nothing in the 2006 letter that even suggests that Illinois had no authority to take some action against the Braidwood licensee. Indeed, some years ago, when the NRC was considering what form of regulation would be best for in situ leach mining facilities, the NRC initially sought to have the States regulate groundwater at such facilities. See, e.g., Regulatory Issue Summary 2004-09, June 7, 2004. But NRC cannot set forth, in writing, just which actions the State could take, and under what circumstances there is no interference with our regulatory authority. As your letter observes, "the ability of the states to enforce these laws against licensed nuclear facilities has not been tested."

Over the years, the NRC has generally avoided making declarations about what States, or other Federal agencies, can and cannot do. For example, when the Nuclear Energy Institute in 2002 petitioned the agency to restate Federal preemption law, and to provide procedures whereby any person could request an NRC staff determination as to whether a particular State or local requirement was preempted by NRC's requirements, the NRC denied the petition, partly because any opinion the agency issued would be at best only guidance as to how a court might rule when faced with a preemption challenge to a State or local action. See 67 Fed. Reg. 66074, 66076 (Oct. 30, 2002). As far as I know, only once, when the City of New York was requiring Columbia University to get a radiological safety permit from the City, has the NRC appeared in court as a plaintiff seeking a ruling that the Atomic Energy Act preempted State or local action. See *U.S. v. City of New York*, 463 F.Supp. 604 (S.D.N.Y., 1978). Even when the controversy has been over releases of tritium from nuclear power plants, the agency has generally avoided statements about what a State can and cannot do.

The exceptions to the NRC's general policy of not making declarations in regard to preemption have arisen in situations that demanded some clarification of lines of authorities. For example, when, in the mid-1990s, the U.S. Environmental Protection Agency (EPA) rescinded its regulation of nuclear power plants under the Clean Air Act, the question arose whether States exercising authority under the same Act retained any authority over those same plants. Both the EPA and the NRC agreed that, yes, the States did retain such authority, even though EPA no longer exercised its own authority. Indeed, the EPA and the NRC said that the States could set more stringent standards for radionuclide air emissions from these plants than did the NRC. 60 Fed. Reg. 46206, 46210 (September 5, 1995). Another case in which lines of authorities demanded clarification was the case, already mentioned, in which New York City sought to require that Columbia have a radiological health and safety permit from the City. The Atomic Energy Act clearly reserves to the NRC the regulation of the radiological health and safety aspects of nuclear reactors. See, e.g., section 274c.(1) of the Act, 42 U.S.C. 2021(c)(1).


The letter OGC sent to Illinois is another such case. Each of the seven specific concerns that the letter raised had to do with actions the State sought to take onsite, for radiological health and safety reasons, sometimes in ways that had safety implications for plant operations. The Atomic Energy Act clearly reserves such actions to the NRC. True, the letter said that the NRC might "seek leave to participate in the [then already existing county] lawsuit to raise the Commission's preemption concerns." But a government agency must be free to request such participation if that agency determines that it needs to convey its views to a court. The alternative is a doctrine that an agency must always depend on private litigants or other governmental entities to seek to draw boundaries of its own authority. OGC's letter did not deny that the State had authority to take some action toward the licensee, and indeed the letter did not assert that the State was entirely without authority to take even action that could affect plant operations. The EPA, for example, has Clean Water Act authority over water intake structures at nuclear power plants, but, for nuclear safety reasons, the EPA exercises such authority only in consultation with the NRC. See 69 Fed. Reg. 41576, 41585 (July 9, 2004). The same is reasonably to be expected of States acting in similar circumstances. In the end, as a result of the consultations between OGC and the Illinois Attorney General's Office, the NRC did not intervene in the lawsuit, and Illinois proceeded with its action against the NRC licensee.

Preemption law is far too complex for easy generalization. The distribution of authorities among Federal and State governmental entities is one thing under the Clean Water Act, another under the Clean Air Act, another under the Atomic Energy Act, and yet another under the Coastal Zone Management Act. Consultations among governments on environmental matters are often essential, and States frequently initiate such consultations. You "think it notable and deserving of Congressional attention if the NRC were to exercise its preemptive authority on behalf of the nuclear industry in order to block State regulators from holding nuclear corporations accountable for the contamination of drinking water resources." However, the sentence misses the mark on several grounds -- for example, in its suggestion that the NRC would seek preemption in order to protect the industry, and the implication that the NRC has expansive preemptive authority that it can exercise unilaterally. But the sentence is especially troubling to the extent it suggests that Congress should prevent one government agency from expressing concerns about where the line is between its and another government agency's respective jurisdictions. Such consultations are a necessary part of the attentive implementation of complex statutes enacted in the public interest.

With respect to the general issue of groundwater, I am sure you are now aware that the report of the NRC's Groundwater Task Force has been issued and the Executive Director of Operations has formed a senior management review group to evaluate the report and make recommendations for Commission consideration later this year.

Please do not hesitate to contact me if you have questions about NRC's legal framework.

Sincerely,



Stephen G. Burns
General Counsel

From: Charles W Forsberg
Sent: Wednesday, March 2, 2022 9:38 AM
To: Consent Based Siting
CC: Charles W Forsberg
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: RFI Consent Based Siting 2022 Forsberg.pdf

Attached is my response to the DOE request for information on consent-based siting and federal interim storage.

Charles Forsberg
PI: Fluoride-Salt-Cooled High-Temperature Reactor (FHR) Project
Executive Director: MIT Nuclear Fuel Cycle Study
University Lead: INL Hybrid Energy Systems
Department of Nuclear Science and Engineering
Massachusetts Institute of Technology

[REDACTED]

[REDACTED]

<http://web.mit.edu/nse/people/research/forsberg.html>

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**Reply to: Request for Information (RFI) on Using a Consent-Based Siting Process to Identify
Federal Interim Storage Facilities**

Date: 2 March 2022

Dear Sir;

I would like to address two questions in your RFI: (1) Area 1: the consent-based siting process and (2) Area 3 Interim storage as part of a waste management system.

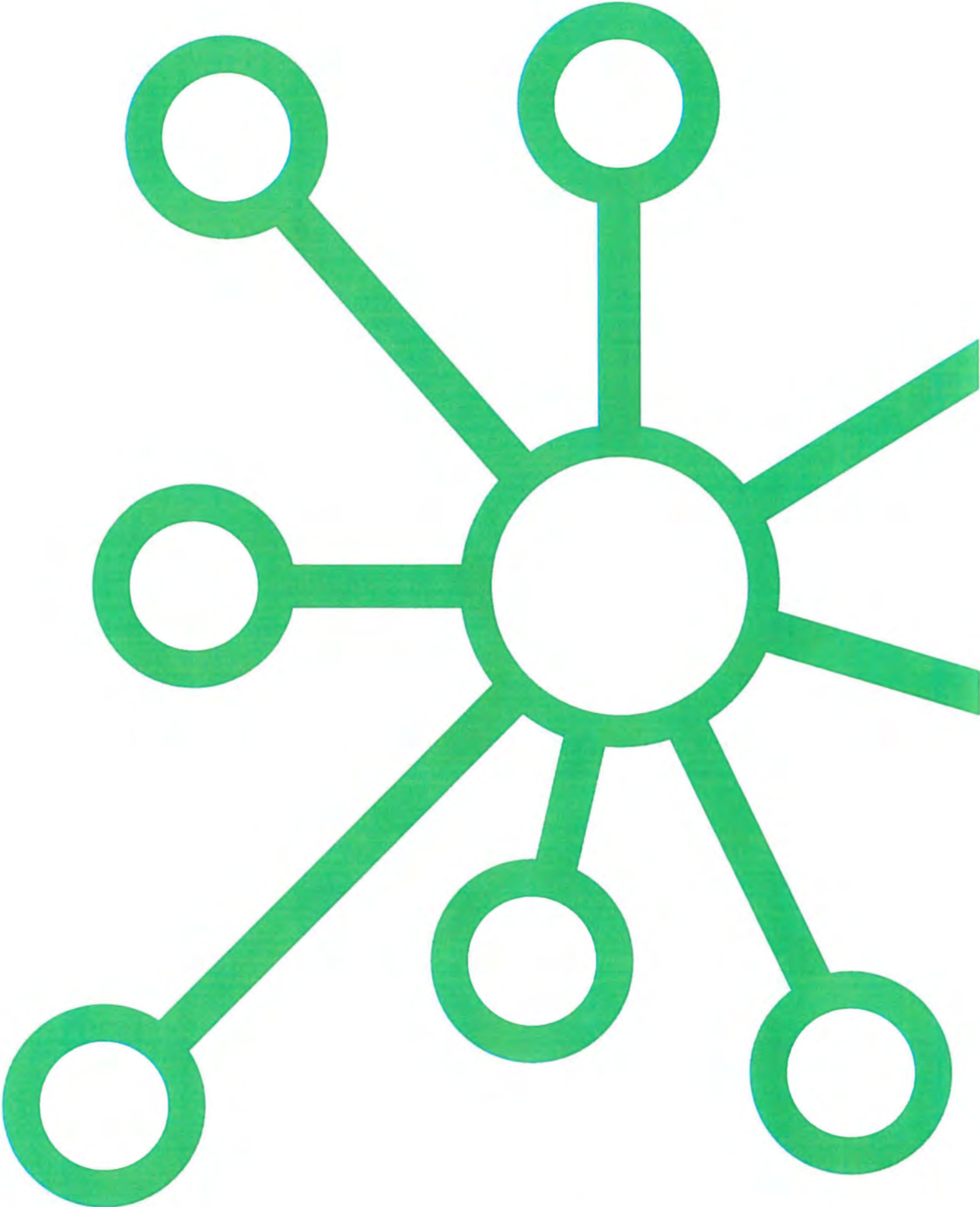
The organization of the commercial fuel cycle with the geographical separation of waste management and disposal facilities from other nuclear facilities is an historical artifact. There are large economic and institutional incentives to collocate many fuel cycle facilities with waste storage facilities and the repository. Similarly, there are large economic and institutional incentives to collocate proposed fission battery factories and nuclear hydrogen/synthetic-fuel gigafactories with waste management facilities (used fuel storage, low-level waste disposal, etc.) to create Nuclear Technology Hubs that create economic savings, jobs and tax revenue, and simplify waste management.

The economic savings are from shared services (e.g., security and environmental monitoring), a larger infrastructure of local supporting organizations (e.g., consultants, specialty supply companies, and worker training programs), and the elimination of transportation links. The institutional incentives of coupling facilities include (1) creating strong local and state support because creating new business opportunities, large numbers of long-term high-paying jobs including many blue collar jobs, long-term tax revenue and (2) a knowledgeable local and state government in terms of permitting and support, such as local worker training classes and universities.

The Consent Based Siting initiative should include a major effort to rethink the fuel cycle with collocation of waste management with other nuclear facilities. Below is my paper from the spring issue of *Radwaste Solutions* [<https://www.ans.org/pubs/magazines/rs/>] that provides added recommendations and detailed technical references on previous studies in this area. This is fundamentally about creating incentives. If there are any questions, feel free to contact me.



Dr. Charles Forsberg [REDACTED]
Department of Nuclear Science and Engineering
Massachusetts Institute of Technology
77 Massachusetts Ave., Cambridge, MA
[REDACTED]



NUCLEAR TECH HUB:

Co-siting cutting-edge nuclear facilities with waste management sites

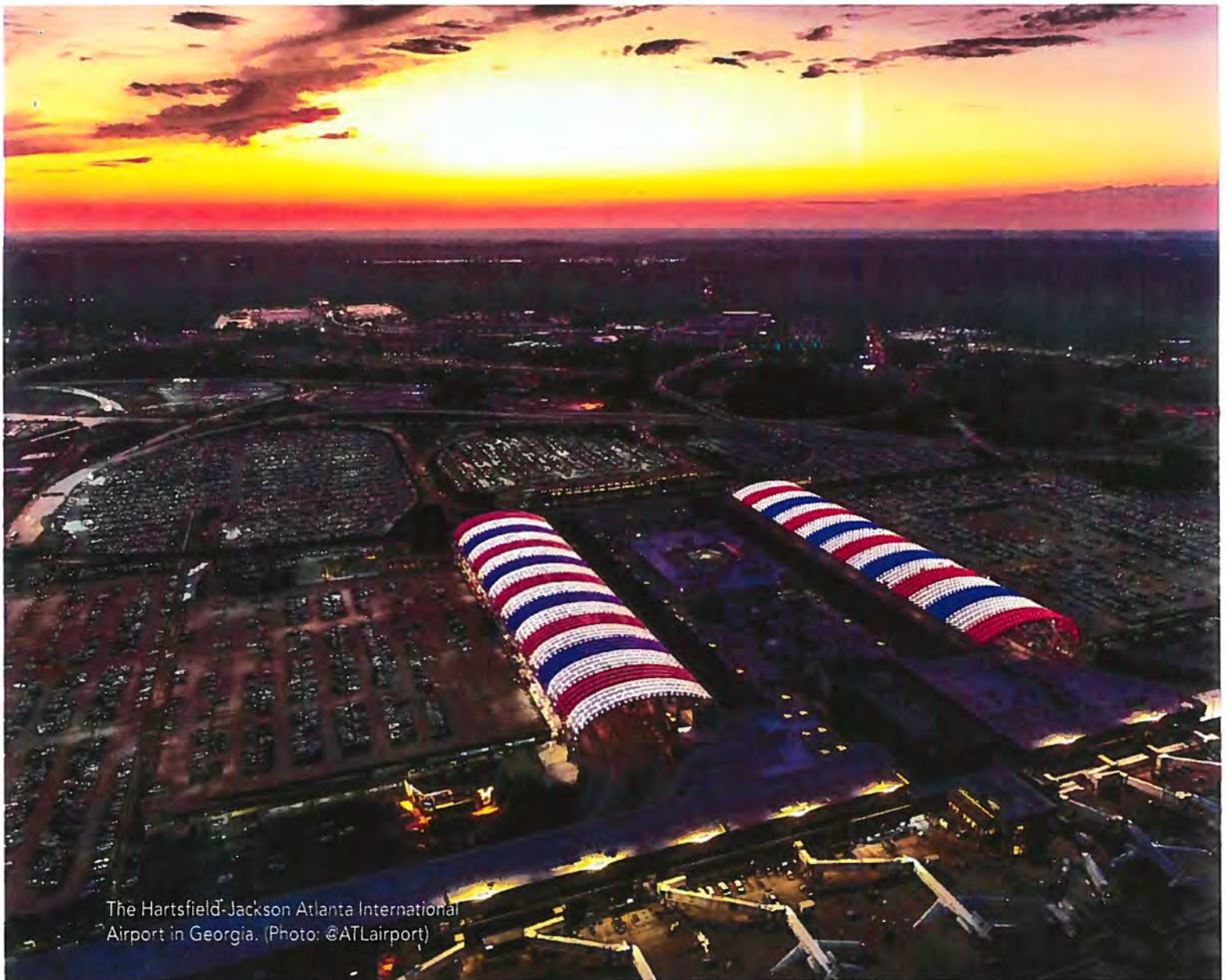
By Charles Forsberg, Jacopo Buongiorno, and Eric Ingersoll

The organization of the commercial fuel cycle with the geographical separation of waste disposal facilities from other nuclear facilities is a historical artifact. There are large economic and institutional incentives to collocate many fuel cycle facilities with the repository. Similarly, there are large economic and institutional incentives to collocate proposed fission battery factories and nuclear hydrogen/synthetic fuel (synfuel) gigafactories with other waste management facilities (used fuel storage, low-level waste disposal, etc.) to create nuclear technology hubs that create economic savings, generate jobs and tax revenue, and simplify waste management.

The economic savings are from shared services (e.g., security and environmental monitoring), a larger infrastructure of local supporting organizations (e.g., consultants, specialty supply companies, and worker training programs), and the elimination of transportation links. The institutional incentives include (1) creating strong local and state support because new business opportunities, high-paying jobs, tax revenue, and waste management are coupled together; and (2) a knowledgeable local and state government in terms of permitting and support, such as local worker training classes and universities.

The start of such technology hubs is becoming visible around existing Department of Energy sites at Savannah River (South Carolina), Oak Ridge (Tennessee), and Hanford (Washington). The Vogtle nuclear plants are next to the Savannah River Site, and the Columbia nuclear plant is next to Hanford. The first Generation IV reactor, the Kairos Power Fluoride Salt-Cooled High Temperature Reactor test reactor, is to be built at Oak Ridge. Each of these sites has a wide array of government and commercial nuclear facilities on government and private lands—along with specialized technical firms that locate nearby to serve multiple government and private customers.

Continued



The Hartsfield-Jackson Atlanta International Airport in Georgia. (Photo: @ATLairport)

The nearest nonnuclear analogy to a nuclear technology hub can be found in some airports, such as the Hartsfield-Jackson Atlanta International Airport, Mojave Air and Space Port, and Charleston International Airport. Each of these airports has commercial air flights but also other activities that share taxiways, security, and many other services on public and private land. Atlanta has the massive Delta Airlines operations, aircraft maintenance, and training facilities. Charleston is a joint civilian military airport that includes a Boeing commercial aircraft manufacturing plant and other facilities. Mojave has commercial flight testing, space industry development, heavy aircraft maintenance, and commercial aircraft storage.

One would expect a nuclear technology hub to have many types of facilities, including an industrial park with nonpublic rail and roads connecting facilities to allow the on-site transport of radioactive materials without the

requirements for shipping over public highways. That capability enables moving radioactive wastes to central processing and disposal facilities. If there is a low-level waste disposal site, it enables moving large radioactive components used in the hub facilities to the disposal site without cutting components into small pieces to meet over-the-road shipping requirements. The on-site transport of radioactive materials simultaneously reduces costs and risks.

Here we describe three candidate nuclear technology hubs—the repository, the nuclear hydrogen gigafactory, and a fission battery refurbishment facility. The long-term coupling of large numbers of high-paying jobs, tax revenue, and waste management facilities can make such hubs attractive to communities and states, as opposed to isolated waste management facilities, which are typically perceived by the public as “dumps.”



GEOLOGICAL REPOSITORIES

If one were designing a nuclear power system for the United States to minimize costs, risks, social opposition, and environmental impact, what facilities would be collocated with the repository? As the U.S. Department of Energy [1] once again attempts to site a spent nuclear fuel storage facility and then a repository, it is an appropriate time to ask that question. One concludes [2, 3, 4] that such a repository would have thousands of high-paying, nonconstruction, long-term jobs, with the majority of those jobs not associated with repository operations. Those jobs would be associated with the following:

International safeguards training and development center. The repository's receiving facilities will have the largest and most varied collection of incoming spent nuclear fuel in the world. That makes it a preferred location for training International Atomic Energy Agency inspectors and testing safeguards systems on multiple types of SNF. Such a center generates large numbers of secondary hotel and restaurant jobs because of the continuous influx of people for training.

SNF and high-activity materials testing and processing. The United States has a large number of facilities that inspect, test, and treat SNF (including failed fuel), highly radiative sources such as cobalt-60 and cesium-137, and high-activity wastes from producing medical and other isotopes. The costs of operating and maintaining these facilities are high for several reasons. First, each facility has its own security, environmental monitoring, and similar overhead functions. Second, these facilities generate complex mixtures of high-level radioactive waste, high-activity wastes, irradiated metals, and other wastes. Collocation with a repository enables (1) sharing of security, environmental monitoring, and other overhead services and (2) lower-cost waste disposal.

The processing and disposal of many nuclear waste streams are expensive because of the conflicting requirements for transportation and disposal. For transport, waste volumes are best minimized to minimize transport costs. Large, contaminated components are size-reduced to fit within transport containers. For disposal, one wants waste forms with good long-term performance. With collocated facilities, one can use alternative lower-cost waste forms, such as special cements that perform better than HLW glass, but are not used today because these waste forms increase final waste volumes and thus shipping costs. (One factor for better waste-form performance is that with lower concentrations of radionuclides in the waste form, there is less radiation damage to the waste form.) With collocation, highway size and weight requirements are eliminated.

The current facilities that treat and package these materials range in size from large facilities, such as the Naval Reactors Facility in Idaho, to smaller facilities with a few tens of employees. In the Navy facility, samples are taken from Navy SNF and destructively tested to determine long-term fuel performance, and thus how long nuclear naval vessels can remain in operation without refueling or decommissioning. Similar types of operations are performed on commercial and research fuels. There is a long list of such facilities that logically belong at the repository site.

Nuclear fuel reprocessing. Collocation of future reprocessing and fuel fabrication facilities at the repository site results in massive reductions in capital and operating costs from front-end receiving facilities to waste management—possibly by a third or more. During the Cold War, the Hanford PUREX plant processed 5,000 to 7,000 tons of short-lived targets and fuel per year to recover weapons plutonium, and yet it was much smaller than the French La Hague commercial facility with a throughput of only 1,600 tons per year. On-site waste disposal was the primary difference.

Continued



For example, chemical de-cladding of fuel (Hanford) is less expensive than mechanical de-cladding but generates much larger waste volumes—volumes that make it expensive to ship such wastes off-site for disposal. The actual separations section of a reprocessing plant that separates fissile and fertile material is less than 10 percent of the total capital cost.

Hanford had many failures in waste management because of the use of shallow-land disposal and tank storage for these long-lived wastes. These challenges, however, are eliminated if the reprocessing plant is collocated with the repository and the use of lower-cost, higher-performance, higher-volume waste forms.

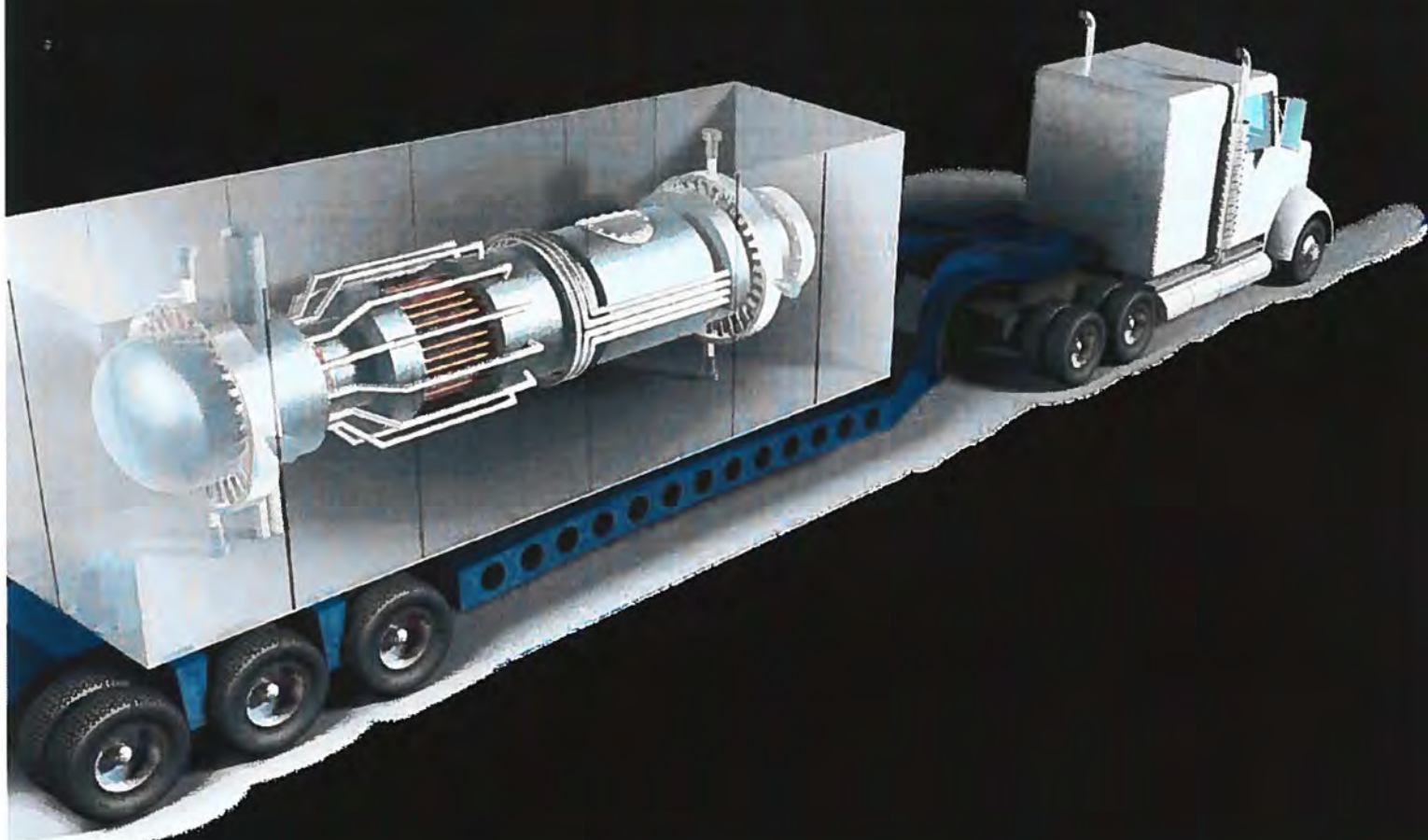
The other area of saving is joint services (security, radiation monitoring, etc.) and facilities such as front-end receiving facilities for SNF and HLW at the repository and reprocessing plant. If economics drives reprocessing decisions, SNF with high fissile content will be reprocessed, but SNF with low fissile content or SNF that is difficult to process will be considered waste. The same front-end facilities can be used for both facilities.

Collocation imposes siting requirements because of the need for good transportation and a sufficiently large labor force. In economics, the lowest-cost repositories have also been recognized as a preferred method for disposal of long-lived radioactive wastes because of its capabilities to assure waste isolation for very long periods of time [5]. The one operating permanent repository in the United States, the Waste Isolation Pilot Plant for defense wastes in New Mexico, is in salt. In Europe, multiple geological repositories for the disposal of toxic heavy-metal wastes exist in salt deposits, including the Herfa-Neurode hazardous waste repository in Germany, which was the first geological repository in the world to be built.

As shown in Fig. 1, salt deposits exist across much of the United States. Other geologies can be used but the disposal costs would be higher. A significant fraction of the United States is suitable for shallow-land and geological disposal of different radioactive wastes. Siting is not limited by geology.



Fig. 1. Rock salt deposits in the United States.



FISSION BATTERIES

teristics [6, 7, 8, 9]: (1) mass-produced in factories in standard sizes to economically compete in major markets, (2) shipped as complete systems to the customer and returned to the factory after use, (3) operate in a secure and unattended manner, and (4) highly reliable. Mass production and transportability enables widespread use and lowers the cost, but this also limits the reactors' physical size and thus their power output. Market, manufacturing costs, and technology limits indicate likely sizes between 5 and 30 MWt.

The markets in a low-carbon world would be for customers using less than 250 MWt for heat and/or electricity production, with many customers having multiple FBs. These batteries would replace oil and natural gas and could be 10 percent of the total energy market—including chemical plants, large institutions (universities, hospitals, etc.), biofuels, industrial customers, data centers, and container ships. Larger energy users in a low-carbon world have other options, such as larger modular reactors and fossil fuels with carbon capture and sequestration—options that

likely to be noncompetitive at smaller scales.

The likely business model is the leasing of FBs [7], similar to the practice of leasing commercial jet engines and aircraft. This places the regulatory burden on the lessor and not the customer, who is not in the energy business but needs energy for his own uses. A single supplier would manufacture and lease thousands of FBs and refuel/refurbish them at the factory for reuse. The FB factory/refurbishment facilities would be the largest radioactive waste generators by volume and second to reprocessing plants by radioactivity—far larger than any single nuclear power plant site.

There would be large incentives for access to the sea by barge for receipt and delivery to different customers. SRS/Vogtle, Oak Ridge, and Hanford have barge access. There also would be large incentives for sites with existing local LLW and SNF storage facilities, such as dry cask storage. A key characteristic is the tight coupling of jobs, tax revenue, and multiple waste management facilities.

Continued

NUCLEAR HYDROGEN PRODUCTION SITES

Any low-carbon future will require massive quantities of hydrogen; partly for industrial uses (e.g., fertilizer, steel, and biofuels) and potentially as a replacement for natural gas. Recent studies [10, 11] have proposed a new model for nuclear hydrogen production—the gigafactory (Fig. 2). A single site would have manufacturing facilities to build modular reactors and use the heat and electricity from those reactors to produce hydrogen. The hydrogen would be consumed by a downstream process (e.g., synfuel and ammonia) or injected into the gas grid.

The reactors would be installed during the multiyear construction process and returned to the collocated factory for refurbishment or decommissioning as appropriate.

There are massive economic gains obtained by serial production, maintenance, operation, and refurbishment of all reactors on a single site, as all the potentially high costs associated with the conventional approach to these activities can be replaced with high-productivity, lower-cost manufacturing processes. Initial studies examined a site with 36 reactors of 600 MWt each for a hydrogen production rate of 2 million tons per year, or equivalent to the output of a medium-size refinery—about 200,000 barrels per day of synfuel. Current U.S. hydrogen production is about 11 million tons per year, but many low-carbon energy futures predict that hydrogen demand will grow to 100 million tons per year.

The gigafactory is made possible by the characteristics of hydrogen/synfuel. The energy output of such a facility would be similar to a large integrated oil refinery. In this context, there is a major difference between the capabilities of large electricity transmission systems and large pipeline systems and their associated storage facilities. Large electricity transmission lines have capacities of 1 to 3 gigawatts and essentially no storage. Pipelines have transmission capacities measured in tens of gigawatts. Hydrogen and synfuels, like natural gas and liquid products, can be stored in underground facilities. Those facilities today store a 30-day supply of natural gas. It is the ability to produce and store hydrogen at scale and transport it to a wide customer base that makes large, centralized facilities like the gigafactory a technical and economically viable option. Synfuels enable even longer-range tanker transport and sales to the global market.



Fig. 2. Hydrogen gigafactory with factory in back, reactor field in the middle, and hydrogen plant in the front. (Image: LucidCatalyst)

The second factor is the economics of low-carbon hydrogen production. Hydrogen production facilities have high capital costs and must be operated at high capacity factors to be economical, as shown in Fig. 3. That requirement couples well with nuclear plants but makes hydrogen expensive if the energy comes from sources such as solar with low capacity factors. Nuclear plants have capacity factors of about 90 percent, versus wind (about 35 percent) and solar (about 25 percent). Hydrogen plants, like all other chemical plants, have large economics of scale and strongly favor steady-state operation—matching nuclear plant characteristics.

A gigafactory with tens of gigawatts output implies large waste generation rates—larger than any existing nuclear power reactor site. This creates incentives to choose existing sites with existing SNF storage facilities and/or LLW disposal sites.

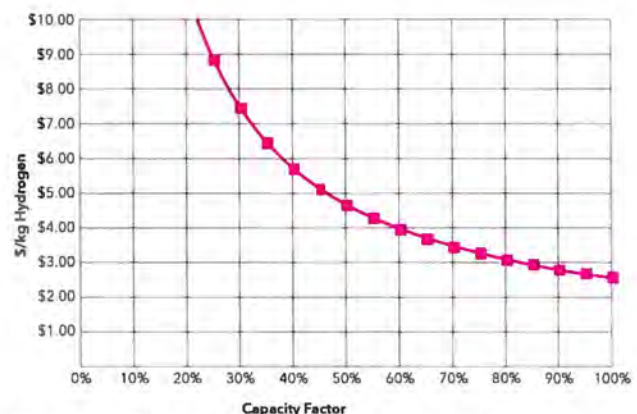


Fig. 3. Illustrative cost of hydrogen vs. capacity factor. (Graph: LucidCatalyst)

INSTITUTIONAL STRUCTURES

Nuclear technology hubs require a different business and institutional structure [2, 4] because the different owners of facilities have different priorities but must cooperate to be successful. As mentioned, a few airports provide models for such nuclear technology hubs. There are different security zones and internal roads or railroads for the transport of materials, including radioactive wastes, between facilities. There also must be sufficient land for expansion and good transportation links. Nuclear technology hubs would be the logical sites for regional SNF storage and other waste management activities because such sites would have lifetimes of many decades or centuries. Such a nuclear technology hub can be primarily private, public, or some combination of private and public partnership.

There are large incentives to work with local and state governments. Nuclear technology hubs can potentially break the deadlock over waste and repository facility siting. Imagine if the federal government promised several thousand long-term nonconstruction jobs within 10 years of opening a repository with massive added tax revenue—rather than designing repositories that minimize local jobs and benefits. This defines a research and development agenda: identify and understand what facilities and functions should be collocated to minimize total economic and societal costs.

The geographical characteristics of the U.S. nuclear fuel cycle system reflects history. The potential deployment of fission batteries, gigafactories for hydrogen production, and a repository system provides incentives to rethink how we should organize the system to reduce costs and environmental impacts while breaking the roadblocks to a fully functional waste management system. There are similar systems in other industries. A few airports have become aircraft technology hubs, where shared facilities and services provide economic benefits to everyone. For a nuclear repository, the burden of rethinking belongs to the government, while for the other nuclear technology hubs, the burden of rethinking belongs to the private sector. ☒

Charles Forsberg is principal research scientist and Jacopo Buongiorno is TEPCO professor of nuclear science and engineering at Massachusetts Institute of Technology, and Eric Ingersoll is managing director of LucidCatalyst.

ACKNOWLEDGEMENTS

MIT work supported through the INL National Universities Consortium (NUC) Program under DOE Idaho Operations Contract DE-AC07-05ID14517.

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11. EPRI, *Rethinking Deployment Scenarios for Advanced Reactors: Scalable Nuclear Energy for Zero-Carbon Synthetic Fuels and Products*, 3002018348 (Dec. 2021).

From: Victoria Fuller
Sent: Thursday, January 27, 2022 5:53 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage.

Hi, I submitted this previously, but with the wrong subject line, and I am adding more to my comment. Please get rid of all nuclear energy and go only with sustainable options. Nuclear is too dangerous. Storing spent nuclear fuel is problematic. I don't trust that it will be safe. To Err is human, and mistakes are made. One nuclear accident is one too many. Of course you are in the business, so you are going to go right ahead and not listen to me and put lives in jeopardy. What do you consider consent? If a head of a community gives consent but their is a split in the community of 50% against it for safety fears, will you consider that consent?

I have something to add. If you have to go ahead with this, your transport train cars should be disguised as regular train cars, indistinguishable from normal freight cars, to not stand out, in order to not be detectable by terrorists and saboteurs.

Victoria Fuller

Sent from my iPhone

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From: Jenn Galler
Sent: Thursday, March 3, 2022 1:28 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: RFI-Consent-Based Siting and Federal Interim Storage.docx

Jennifer,

Attached are comments on behalf of Blue Ridge Environmental Defense League.

Best,
Jenn

--

Jenn Galler | [REDACTED]
Community Organizer / Project Manager
Blue Ridge Environmental Defense League (www.bredl.org)
Founded in 1984, we have projects and chapters in Alabama, Georgia, Tennessee, South Carolina, North Carolina, and Virginia.

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

March 3, 2022

Jennifer M. Granholm, Secretary of Energy
US Dept. of Energy
1000 Independence Ave., SW
Washington, DC 20585
consentbasedsiting@hq.doe.gov

Re: RFI—Consent-Based Siting and Federal Interim Storage, 86 Fed. Reg. 68244

Dear Secretary Granholm:

On behalf of the Blue Ridge Environmental Defense League and our chapters in Virginia, North Carolina, South Carolina, Tennessee, Alabama and Georgia, I write in response to the above-captioned RFI regarding informed consent-based siting and the disposition of irradiated nuclear fuel.¹

From the beginning, the principle of informed consent has centered in medical therapy and research. Since the early expositions on the concept in Nuremberg after WW2, informed consent has been associated with what a physician may and may not do and in the area of research intrinsically experimental in nature. Is informed consent even applicable to the concept of radioactive waste disposal? We believe not.

In the United States, the ethics of informed consent were elucidated by the erstwhile U.S. Department of Health, Education and Welfare in its 1979 Belmont Report:²

The consent process can be analyzed as containing three elements: information, comprehension and voluntariness.

1) Information. Most codes of research establish specific items for disclosure intended to assure that subjects are given sufficient information. These items generally include: the research procedure, their purposes, risks and anticipated benefits, alternative procedures (where therapy is involved), and a statement offering the subject the opportunity to ask questions and to withdraw at any time from the research.

¹ In these comments, I will use the term “irradiated fuel” instead of “spent nuclear fuel.” The radioactive waste which is the subject of this inquiry is nuclear fuel rods which have been installed in a nuclear reactor core until the byproducts of nuclear fission render the fuel unusable. The fuel is by no means “spent,” because much nuclear energy is still present. The toxic byproducts of atomic fission are the problem.

² *The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research*, The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, April 18, 1979, available March 2022 at <http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html>

2) Comprehension. The manner and context in which information is conveyed is as important as the information itself. For example, presenting information in a disorganized and rapid fashion, allowing too little time for consideration or curtailing opportunities for questioning, all may adversely affect a subject's ability to make an informed choice.

3) Voluntariness. An agreement to participate in research constitutes a valid consent only if voluntarily given. This element of informed consent requires conditions free of coercion and undue influence. Coercion occurs when an overt threat of harm is intentionally presented by one person to another in order to obtain compliance. Undue influence, by contrast, occurs through an offer of an excessive, unwarranted, inappropriate or improper reward or other overture in order to obtain compliance. Also, inducements that would ordinarily be acceptable may become undue influences if the subject is especially vulnerable.

The Consolidated Appropriations Act of 2021 advocates a consent-based approach to siting nuclear waste management facilities. But how would any Administration carry out this charge honorably, impartially and ethically? As outlined in the *Belmont Report*, presenting information in a tendentious fashion, or allowing too little time for consideration or curtailing opportunities for questioning, adversely affects a subject's ability to make an informed choice. Plus there is the possibility that silence may be construed as consent. The element of voluntariness is sharply questionable with regard to the communities, which will likely become the subjects of this process. Even inducements that would ordinarily be acceptable may become undue and improper if the subject is especially vulnerable, such as an economically depressed or politically powerless community. These dumpsite programs invariably come with promises of jobs and economic development, promises which short-circuit debate and sway elected officials.

Working in communities in the Southeast since 1984, we are well aware of radioactive waste initiatives going out to potential waste dump communities. The Blue Ridge Environmental Defense League was founded because of one such program, the DOE's Crystalline Repository Project and interim Monitored Retrievable Storage Site.³ We have continually opposed such radioactive waste dumps wherever they are proposed, including Yucca Mountain, Nevada. Likewise, we oppose so-called consolidated interim storage schemes—including the Holtec International/Eddy-Lea Energy Alliance site in New Mexico and the Waste Control Specialists site in Andrews County, Texas—because nuclear waste shipments to those sites would unnecessarily place millions of people at

³ P.L. 97-425, 96 Stat. 2201, 42 U.S.C. §108, Signed into law by President Reagan Jan. 7, 1981

risk from accident, sabotage, and routine transport exposure. Tribal governments should be at the forefront of this discussion and the decision making process.

In a study done by the State of Nevada, a nationwide irradiated fuel shipping process carried out without an accident would result in the following levels of routine radiation exposure:⁴

- Truck safety inspectors would receive 2,500 millirems per year (mrem/yr);
- Occupants of a vehicle next to a spent fuel truck in a traffic situation lasting one to four hours would receive 10 - 40 mrem per person per incident;
- Members of the public along potential legal weight truck routes in Nevada could receive between 150 - 260 mrem/yr.

Malevolent acts against nuclear fuel and high-level waste shipments are a major threat. The Nuclear and Radiation Studies Board, unable to perform an in-depth technical examination of transportation security because of classified information constraints, nevertheless made the following recommendation:

An independent examination of the security of spent fuel and high-level waste transportation should be carried out prior to the commencement of large-quantity shipments to a federal repository or to interim storage. This examination should provide an integrated evaluation of the threat environment, the response of packages to credible malevolent acts, and operational security requirements for protecting spent fuel and high-level waste while in transport. This examination should be carried out by a technically knowledgeable group that is independent of the government and free from institutional and financial conflicts of interest. This group should be given full access to the necessary classified documents and Safeguards Information to carry out this task. The findings and recommendations from this examination should be made available to the public to the fullest extent possible.⁵

A comprehensive review of nuclear fuel and high-level waste transportation security should have unrestricted access to the information necessary to do this analysis.

Invocation of the Consolidated Appropriations Act must not be allowed obscure the facts about the nuclear fuel cycle, which would unfairly prevent citizens from knowing the nature of the risk. The goal of the Blue Ridge Environmental Defense League is to counter technical jargon that prevents directly affected residents from effective democratic participation. Public participation is essential to protect our families and communities from becoming victims of industrial contamination.

⁴ *Risky Transit—The Federal Government's Risky and Unnecessary Plan to Ship Spent Nuclear Fuel and Highly Radioactive Waste on the Nation's Highways and Rail Roads*, A Report by the Nevada Agency for Nuclear Projects

⁵ *Going the Distance? The Safe Transport of Spent Nuclear Fuel and High-Level Radioactive Waste in the United States* (2006) National Academies Nuclear and Radiation Studies Board.

Further, existing storage of irradiated fuel at nuclear reactor sites must be responsive to the communities where the power plants are located. The concerns of these communities are presented in “Community Principles for Safeguarding Nuclear Waste at Reactors.”⁶

The principle of consent is enshrined in the Declaration of Independence: “That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed.” Consent of the governed is anathema to the “divine right of kings,” which it supplanted. In many ways, electric power companies are the 21st Century equivalent of the Second Estate. This modern equivalent of the nobility has enormous financial and political resources. They enjoy special privileges; for example, claiming the rights of natural persons while being virtually immortal and exceptionally free from prosecution.

The principles of Environmental Justice incorporate 1) the equitable distribution of environmental risks and benefits; 2) the meaningful participation in environmental decision-making; 3) the recognition of community life, local knowledge, and cultural difference; and 4) the capability of communities and individuals to function in society.⁷ It means avoiding disproportionate adverse environmental impacts on low-income populations and minority communities.

For decades, the transfer of liability from private hands to public entities has been the underlying factor driving nuclear waste site legislation. The assumption of this liability by the people via a government agency is a transfer of wealth from poor to rich. Therefore, we see no just application of informed consent to the imposition of a nuclear waste legacy lasting millennia.

Thank you for this opportunity to share our views.

Respectfully,

Jenn Galler, Community Organizer and Project Manager
217 S. East Ave, Baltimore, MD 21224

<http://www.BREDL.org>

Founded in 1984, BREDL has chapters in Alabama, Tennessee, Georgia, South Carolina, North Carolina and Virginia.

⁶ Originally posted June 4, 2007 and available presently at:
<http://www.citizen.org/documents/PrinciplesSafeguardingIrradiatedFuel.pdf>

⁷ *Defining Environmental Justice: Theories, Movements, and Nature*, Schlosberg, David (2007) Oxford University Press.

From: Garcia, Sue E.
Sent: Friday, March 4, 2022 11:04 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: DOE RFI - SDG&E Response.pdf

Attached is the response to the RFI on Consent-Based Siting and Federal Interim Storage from San Diego Gas & Electric.

Sue Garcia
Manager – Nuclear Decommissioning
San Diego Gas & Electric

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March 4, 2022

Office of Nuclear Energy
Department of Energy
consentbasedsiting@hq.doe.gov

Subject: Response to Request for Information: Consent-Based Siting and Federal Interim Storage

San Diego Gas & Electric Company (SDG&E), a 20% owner of San Onofre Nuclear Generating Station (SONGS) of Units 1, 2 & 3, is pleased to provide these comments to the December 1, 2021, Department of Energy's (DOE) Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities. Although overall SDG&E supports an approach that prioritizes stakeholder engagement, social equity and environmental justice, SDG&E does not provide specific comments on how this can be accomplished. Instead, SDG&E's comments are more narrowly focused to questions that address key concerns of a decommissioned nuclear plant co-owner. These comments are primarily based on the conclusions and recommendations from the Strategic Plan for the Relocation of SONGS Spent Nuclear Fuel to an Offsite Storage Facility or Repository (Strategic Plan), the Conceptual Transportation Plan for the Relocation of SONGS Spent Fuel to an Offsite Storage Facility or Repository (Conceptual Transportation Plan) and the related Action Plan for the Relocation of SONGS Spent Fuel to an Offsite Storage Facility or Repository (Action Plan), dated March 15, 2021.¹

SDG&E's contact information:

Company: San Diego Gas & Electric
Contact Name: Sue Garcia, Manager of Nuclear Decommissioning
Address: [REDACTED]
Phone Number: [REDACTED]
Email: [REDACTED]

¹ See <https://www.songscommunity.com/strategic-plan-for-relocating-spent-fuel/spent-nuclear-fuel-solutions-a-fresh-approach>.

RESPONSE TO SPECIFIC QUESTIONS:

Area 1: Consent-Based Siting Process

Question #5: How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

Potential host communities for federal interim storage facilities will need demonstrated progress toward a permanent repository concurrent with the consent-based process for interim storage. The communities will want to know when the permanent repository will be available and in what order spent nuclear fuel will be shipped there.

Question #7: What other issues, including those raised in the *Draft Consent-Based Siting Process*, should the Department consider in implementing a consent-based siting process?

The DOE should also consider the prioritization of spent nuclear fuel from shutdown plants over operating plants. Nuclear plants that have no operating reactor, such as SONGS, cannot be fully decommissioned until there is a place to send the spent nuclear fuel.

The Action Plan identified several relevant considerations for the prioritization including a range of site-specific and systemic factors, such as:

- Status as an operating or shutdown reactor site,
- Compatibility with decommissioning activities,
- Risk reduction for spent nuclear fuel at reactor sites,
- Beneficial re-use of decommissioned sites,
- Total system cost effectiveness,
- Shortened schedules for complete site closure, and
- Facilitation and ease of transportation requirements.²

Area 3: Interim Storage as Part of a Waste Management System

Question #3: To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

The development of a permanent federal repository and any federal interim storage facility should proceed as parallel efforts. As explained above, it will be difficult to proceed with interim storage unless there is certainty regarding how long the spent nuclear fuel will remain there.

² Action Plan at page 6.

Question #4: What other issues should the Department consider in developing a waste management system?

In development of the Action Plan several key structural reforms in support of successfully resetting the federal nuclear waste management program were identified:

- Establishing a path to one or more permanent geologic disposal repositories.
- Authorizing federal interim storage by developing a federal consolidated interim storage facility and/or by allowing the DOE to contract for private storage services.
- Establishing a new single-purpose organization with mission responsibility for the safe management and final disposition of spent nuclear fuel in the United States.
- Establishing a new mechanism for consultation/collaboration between the national nuclear waste management program and state, local and tribal authorities.
- Improving access to the funds currently in the Nuclear Waste Fund to finance needed investments. Specific priorities include:
 - A new or modified mechanism to assure permanent and stable access to already collected ratepayer funds is needed to execute a large, multi-year capital investment program for integrated national nuclear waste management system.
 - Resumption of funding for a permanent geologic repository program and in support of an immediate decision (with any required changes to the Nuclear Waste Policy Act) on whether to restart the licensing process for Yucca Mountain and/or begin work to identify and develop one or more alternative repository sites for the final disposal of all commercial spent nuclear fuel.
 - Clarifying criteria for the reimbursement of costs from the Nuclear Waste Fund and/or Judgment Fund in order to encourage consolidated spent fuel storage.
 - Providing federal support for preparedness capabilities among state, tribal and local entities in connection with private spent nuclear fuel shipments, including support for safety and emergency response training.³

³ Action Plan at pages 5-6.

From: Gorman Prochaska, Pamela
Sent: Friday, March 4, 2022 7:52 AM
To: Consent Based Siting
CC: Gorman Prochaska, Pamela
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: RFI Consent Based Siting and Federal Interim Storage FINAL 030422.pdf

Please find the attached comments on the DOE RFI regarding consent-based siting and Federal Interim Storage.

If you have any questions please do not hesitate to contact me.

Regards,
Pam

Pamela Gorman Prochaska
Xcel Energy | Responsible By Nature
Director, Nuclear Regulatory Policy & Strategy



XCELENERGY.COM

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414 Nicollet Mall
Minneapolis, MN 55401

March 4, 2022

Dr. Kim Petry
Acting Deputy Assistant Secretary for Spent Fuel and Waste Disposition
U.S. Department of Energy
Office of Nuclear Energy
1000 Independence Avenue, SW
Washington, DC 20585

Submitted via consentbasedsiting@hq.doe.gov

Subject: RFI: Consent-Based Siting and Federal Interim Storage

Dear Acting Deputy Assistant Secretary Petry:

Xcel Energy is pleased to provide comments to the Department of Energy regarding the subject RFI on use of a consent-based siting process to identify a federal interim storage facility.

Xcel Energy is headquartered in Minneapolis, Minnesota, and serves more than 3 million electric and natural gas utility customers in eight states. Xcel Energy is uniquely qualified to provide comments on the DOE RFI, with over 57 years of nuclear power operation and used fuel management experience, as well as over 27 years of experience safely managing spent nuclear fuel in dry cask storage.

Xcel Energy's nuclear experience began in 1964 with the Pathfinder Atomic Power Plant in South Dakota and included the decommissioned Fort Saint Vrain nuclear power plant in Colorado as well as currently operating nuclear power plants located in Red Wing and Monticello, Minnesota. The two nuclear facilities in Minnesota both have dry fuel storage facilities, where the first site became operational in 1995. Xcel Energy currently has over 3,700 fuel assemblies in dry storage at our two operating nuclear power plants.

In addition to our nuclear power operations and spent fuel storage experience, Xcel Energy has extensive experience in safely transporting spent nuclear fuel assemblies to offsite locations. The Monticello plant in Minnesota shipped 1,058 spent fuel assemblies over commercial rail lines across three different states to General Electric Company's Morris Illinois offsite spent fuel storage facility. Xcel Energy is also a member of Private Fuel Storage, LLC which designed and received NRC approval of a centralized spent fuel storage facility in Utah.

From a consent-based standpoint, as required by state law Xcel Energy has gained approval from both the State of Minnesota Public Utilities Commission and the State of Minnesota Legislature for the dry cask storage facilities at both our Prairie Island and Monticello nuclear generating facilities. Notably, the Prairie Island plant and dry cask storage facility property is adjacent to the federally recognized Prairie Island Indian Community. Xcel Energy has worked extensively with the tribal leaders to address their concerns on nuclear waste storage, including partnering on efforts to promote a federal solution.

First and foremost, Xcel Energy endorses the comments provided by the Nuclear Energy Institute (NEI) on behalf of the nuclear power industry. Along with NEI, Xcel Energy supports DOE's efforts to develop a consent-based process for federal interim storage. We believe the DOE program should recognize and leverage the industry's successful record of safely storing spent fuel using dry cask storage as well as the both the industry and DOE experience in safely transporting spent nuclear fuel.

We would like to emphasize and add to the NEI comments on four specific questions contained in the RFI.

Process Question 2: *What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?*

Xcel Energy wishes to emphasize the importance of working closely with Tribal governments when considering a potential site under this program. As NEI notes the importance of early engagement in defining roles, responsibilities, and authorities of tribal, state, and local governments in determining consent. Tribal governments have a unique perspective and it is important that the DOE appropriately value and use this perspective to improve the overall process. Xcel Energy values our relationship with

the Prairie Island Indian Community and we worked to find areas of mutual concern and mutual benefit, including efforts to encourage the Federal Government to meet its responsibilities to permanently dispose to Xcel Energy's (and the nation's) spent nuclear fuel.

Process Question 7? *What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?*

In addition to NEI's comments, we would urge that the DOE move promptly to complete the RFI process and put in place a consent-based siting process. Having started a consent-based siting process in 1987 with the creation of the Office of the Nuclear Waste Negotiator, terminated that process in 1995, initiated the design of a new consent-based siting process in December 2015, and now moving forward with the RFI, the DOE has already spent a quarter century on consent-based siting without proposing or adopting a process, let alone putting that process in effect and securing a consent-based site. The Department must move with greater urgency than has been demonstrated in the past.

While DOE needs to adopt a consent-based siting process, that process must allow flexibility to meet the needs of potentially interested jurisdictions. One size clearly does not fit all. For example, the consent-based siting process should be able to accommodate one or more of the currently proposed interim storage projects should a host jurisdiction wish to have that site considered by the DOE. Those sites are private initiatives and are therefore outside the literal terms of the RFI. They are already licensed by the NRC or well on their way to licensing. The process should nevertheless allow those sites to be considered along with sites as yet identified.

Participation Question 4: *How might the Department more effectively engage with local State, and Tribal governments on consent-based siting of federal interim storage facilities?*

In addition to the NEI comments on Participation Question 4, Xcel Energy encourages the DOE to understand and apply the lessons learned from its experience with the Nuclear Waste Negotiator.

The Nuclear Waste Policy Act established the framework for consent-based siting of both interim storage and permanent disposal with the 1987 amendments to the NWPA. The Office of the Nuclear Waste Negotiator was created and directed to "attempt to find a State or Indian Tribe willing to host a repository or monitored

retrievable storage facility at a technically qualified site on reasonable terms and shall negotiate with any State or Indian Tribe which expresses an interest in hosting a repository or monitored interim storage facility.” The Negotiator was in place from 1990 to 1995 and received expressions of interest from counties and tribes. Participating tribes received DOE grants for the purpose of evaluating their interest in hosting such facilities. The Negotiator was continuing to interact with a number of these tribes in 1995 when Congress terminated funding for the process program. In designing a new consent-based process, DOE needs to consider the experience of the Negotiator and the lessons learned, including how the DOE can provide confidence to the participants that the program will continue to a conclusion.

System Question 3: *To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?*

In addition to the NEI comments on this Question, we would encourage DOE to explain why it is only seeking input on consent-based siting for interim storage and is largely ignoring permanent disposal. Visible progress by the DOE is meeting its statutory and contractual obligation to permanently dispose of the nation’s spent nuclear fuel is vitally important to the country. In Minnesota, this has been the public’s single largest concern to continued operation of our nuclear power plants. Expansion of the dry cask storage facilities is needed for our State to continue to realize the benefits of the carbon free power provided from our nuclear power plants. This, in turn, requires extensive review and approval by the State of Minnesota. Authority for additional spent fuel storage required a Certificate of Need from the Minnesota Public Utilities Commission, when then must be reviewed by the Minnesota legislature. The state of the Federal Government’s nuclear waste disposal program is the most frequently heard issue in connection with the needed expansion of our spent fuel storage capabilities.

Given the federal government’s commitments and obligations defined more than 40 years ago in the Nuclear Waste Policy Act of 1982, no one imagined used fuel would still be building up at our nuclear plant sites with no realistic expectation that it will be removed to a permanent, geologic repository in the foreseeable future. To regain the public’s trust, we believe it is imperative that the federal government have a credible plan to manage used nuclear fuel and demonstrate by action its ability to implement that plan. Particularly when we see nations such as Finland, Sweden, France, and Canada moving forward toward permanent disposal, the absence of progress by the

DOE is disheartening and disappointing. While the development of a consent-based siting process is an excellent first step towards the development of centralized interim storage capability, the federal government must simultaneously take steps towards implementing the permanent disposal capability that it remains responsible for.

We appreciate the opportunity to comment on this important matter and commend the Department of Energy for working to move forward on such an important issue. If you have any questions or require additional information, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Peter A. Gardner". The signature is fluid and cursive, with a long horizontal stroke at the end.

Peter Gardner
Chief Nuclear Officer
Xcel Energy

From: [REDACTED]
Sent: Wednesday, March 2, 2022 8:37 AM
To: Consent Based Siting
Subject: [EXTERNAL] What is consent?

It is not strong-armed, or bribed, or uninformed; it is only truly consent if all facts and projections are presented clearly, in lay-**persons' language, not industry jargon; if the science is explained; if the true potential for leaks, accidents, and attacks are laid out fully, not glossed over.** Consent means that every individual in a community has an **opportunity to tell per representative how best to represent that individual's interests—**that means town-hall meetings, referenda, online information and paper information at easily-accessible locations, translation into multiple languages (my guide for that in New Jersey is the same languages that are required for election materials; IDK if other states have similar election standards, or if information should be taken directly from the census, but it must not be ignored), and the like. It means both government officials, independent scientists presenting information along with financial experts and industry personnel. It might mean a limit on advertising that is not purely factual.

So far, this has not been happening—there seem to have been backroom deals, generous financial programs offered, etc., and the voices of those who raise concerns have been pushed aside. That must stop.

Another issue with consolidated storage is the experience of the many communities between the end points through which waste would need to travel. Many first responders in these communities are not trained to deal with radioactive materials, and many are volunteers, with less opportunity to attend such trainings even if they are made available. These concerns are almost impossible to address, especially through an economically viable means. Yes, a complete clean-up team could travel with each shipment, but clearly that is not going to happen, and with unpredictable accidents (or they would not be accidents, by definition), there could well be time lost in getting clean-up crews and equipment to the site of an accident. We have seen false promises of a 3-minute shut-off of gas pipes; we saw the 17-hour spill into the Kalamazoo River—what false or overly optimistic promises will the nuclear industry make? How will we hold them to those promises, and how do we face those who are harmed when the inevitable accident happens, radiation is released, and the consequences are cancer, mutations, and who knows what all?

Native Americans knew that uranium must remain underground—that bringing it up caused death and destruction. We have ignored that wisdom at our (and their) peril, and the more we move it, the more chances for something to go deadly wrong. We need to look to the strongest possible storage, as close to the site of generation as possible, and ensure that communities in which reactors are closing continue to be compensated for holding the waste as they were by the profitable, if deadly, energy-generating reactors.

Sally Gellert

[REDACTED]

[REDACTED]

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From: [REDACTED]
Sent: Sunday, January 30, 2022 8:14 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

Social equity and environmental justice should be a top priority for “consent-based siting” of federal, so-called “consolidated interim storage facilities” (CISFs). It is Orwellian to float the offer of jobs, infrastructure development, and potential funding to BIPOC (Black, Indigenous, People of Color) communities, low-income communities, and such communities already disproportionately impacted by hazardous facilities, and portray it as a social equity and environmental justice advancement. BIPOC, low-income, and already heavily polluted communities should not be further disproportionately impacted with CISFs for one of the most hazardous substances ever generated by human society, highly radioactive irradiated nuclear fuel.

Tribal, State, and Local governments should have free, and fully-informed, consent-based siting rights, including an absolute veto against a federal CISF. That is, Tribal, State, and Local governments should have fully-informed, absolute, binding, and final rights to non-consent. Any DOE, or private, scheme to construct and operate a CISF must cease and desist immediately, once Tribal, State, and/or Local government “hosts” express their non-consent. In addition, consent-based siting rights should extend directly to the citizens/residents of the tribal reservation, state, and/or locality. Free, and fully-informed, consent-based siting rights should extend to citizens/residents, who should also have absolute and final veto rights to block CISFs.

The idea that jobs, infrastructure development, and/or potential funding, associated with the construction and operation of a CISF, is not compatible with environmental justice and social equity, when the CISF is targeted at BIPOC and/or low-income communities, already heavily polluted by nuclear and/or other hazardous industries. Thus, DOE should cease and desist from targeting BIPOC, low-income, and/or already heavily polluted communities for CISFs. Instead, the benefits and opportunities that DOE should be extending to Local, State, and/ or Tribal governments, in line with environmental justice and social equity, should be renewable energy and energy efficiency in nature. DOE should shift resources from the dead end that is promotion of the nuclear power industry and its dirty, dangerous, and expensive agenda, and instead promote renewables, such as wind and solar power, as well as energy efficiency.

Thank you.

Sincerely,

Mark M Giese
[REDACTED]

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From: [REDACTED]
Sent: Thursday, February 3, 2022 9:09 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

From

Mark M Giese
[REDACTED]
[REDACTED]

I wish to advocate for health, safety, security, the environment, and environmental justice, by opposing DOE's latest bid to open dangerous, *de facto* permanent surface storage, "parking lot" dumps. Please cancel these plans.

Thank you.

Sincerely,
Mark M Giese
[REDACTED]

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From: [REDACTED]
Sent: Tuesday, February 22, 2022 8:53 PM
To: Consent Based Siting
Subject: [EXTERNAL] Proposed establishment of indefinite, above-ground storage of high-level radioactive waste (waste fuel from reactors) at sites in New Mexico and/or Texas

From

Mark M Giese, individual
[REDACTED]

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

Social equity and environmental justice should be a top priority for “consent-based siting” of federal, so-called “consolidated interim storage facilities” (CISFs). It is Orwellian to float the offer of jobs, infrastructure development, and potential funding to BIPOC (Black, Indigenous, People of Color) communities, low-income communities, and such communities already disproportionately impacted by hazardous facilities, and portray it as a social equity and environmental justice advancement. BIPOC, low-income, and already heavily polluted communities should not be further disproportionately impacted with CISFs for one of the most hazardous substances ever generated by human society, highly radioactive irradiated nuclear fuel.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

As mentioned above, BIPOC and/or low-income communities, as well as those already disproportionately polluted, should not even be targeted for CISFs in the first place. It would be an environmental justice violation, on its face. But DOE could and should support BIPOC and/ or low-income communities, especially those already shouldering disproportionately high hazardous industry burdens, in consent-based siting of safe, clean, renewable energy and energy efficiency economic development. This would comport with the Biden administration’s stated EJ principles.

Thank you.

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From: Gerard Gilliland
Sent: Tuesday, March 1, 2022 9:19 AM
To: Consent Based Siting
Subject: [EXTERNAL] Consent based siting

To: Office of Spent Fuel and Waste Disposition, Office of Nuclear Energy, Department of Energy,
Thank you for the opportunity to comment.

Consent-based siting process

Depleted fuel should be stored on the site where it was used.

No transpiration is required (other than within the area).

The people who brought nuclear power to the area should be responsible for storing the depleted fuel.

We need people to recognize the true cost of nuclear power.

Fort Saint Vrain (Colorado) stored their depleted fuel on site.

I don't have an answer for submarine depleted power.

Any storage will require transportation.

Removing barriers to meaningful participation

I can not see any area that would want the depleted fuel.

Maybe one company will get some money but the community will be stuck with the depleted fuel.

Interim storage as part of a waste management system

It should be permanent storage on site.

Interim storage is just postponing the problem.

The real solution is to de-contaminate the depleted fuel.

Maybe some day (century) physics can tackle that problem.

The best solution is stop using nuclear fuel.

Solar, Wind, and Battery is safe and the energy is free.

Thank you and Peace,

Gerard

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From: Abigail Gindele
Sent: Friday, February 25, 2022 2:34 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Abigail Gindele

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From: GINSBERG, Ellen
Sent: Friday, March 4, 2022 11:00 AM
To: Consent Based Siting
CC: Trunzo, Alisa; Petry, Kimberly; Rund, Jonathan; McCULLUM, Rodney
Subject: [EXTERNAL] Nuclear Energy Institute's Response to DOE's RFI: Consent-Based Siting and Federal Interim Storage
Attachments: 2022 03 04 NEI Comments - DOE Consent-Based RFI.pdf

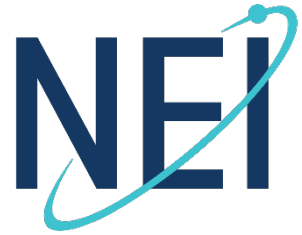
On behalf of our members, the Nuclear Energy Institute submits the attached comments in response to the U.S. Department of Energy's RFI on developing a process to site federal facilities for the consolidated interim storage of used nuclear fuel using a consent-based approach. NEI appreciates the opportunity to provide the industry's views and looks forward to further engagement with DOE and other stakeholders on this important matter. Thank you for your consideration of NEI's comments. If you have any questions or require additional information, please feel free to contact me.



Ellen C. Ginsberg | Sr. Vice President, General Counsel and Secretary
Nuclear Energy Institute

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March 4, 2022

Dr. Kim Petry
Acting Deputy Assistant Secretary for Spent Fuel and Waste Disposition
U.S. Department of Energy
Office of Nuclear Energy
1000 Independence Avenue, SW
Washington, DC 20585

Submitted via consentbasedsiting@hq.doe.gov

Subject: Nuclear Energy Institute's Response to DOE's RFI on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Fed. Reg. 68,244 (Dec. 1, 2021)

Dear Acting Deputy Assistant Secretary Petry:

On behalf of our members, the Nuclear Energy Institute (NEI)¹ submits these comments in response to the U.S. Department of Energy's request for information (RFI) on developing a process to site federal facilities for the consolidated interim storage (CIS) of used nuclear fuel using a consent-based approach.² NEI appreciates the opportunity to provide the industry's views and looks forward to further engagement with DOE and other stakeholders on this important matter.

NEI supports DOE's efforts to develop a consent-based process for siting federal CIS facilities. These efforts have the potential to build on the industry's successful use of innovative dry-cask storage technology to store used fuel safely and securely at sites in 35 states. Industry has maintained 3,600 dry cask storage systems over the past 35 years at reactor sites. These robust casks protect public safety and the environment with multiple layers of concrete and steel containment, and with no moving parts.

Although industry has always done its part assuring the safe management of used fuel, at-reactor storage is a temporary measure until the federal government acts to meet its legal obligation to provide for permanent disposal. The federal government's longstanding failure to meet its obligation unnecessarily constrains public support for nuclear energy even though nuclear energy provides half of the nation's carbon-free electricity and is poised to provide much more with advanced reactor designs being developed and deployed soon. Nuclear energy is key to meeting the nation's clean energy needs,

¹ NEI is the trade association for the commercial nuclear technologies industry. NEI's mission is to promote the use and growth of nuclear energy through efficient operations and effective policy. NEI has hundreds of members, and its membership includes companies licensed to own or operate commercial nuclear power plants in the United States, as well as nuclear plant designers, major architectural and engineering firms, entities that process nuclear fuel, and other organizations involved in the nuclear industry.

² Department of Energy, Notice of Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Fed. Reg. 68,244 (Dec. 1, 2021).

so burdening it with the weight of a floundering federal program unnecessarily limits our tools to combat climate change at a time when we need every available carbon-free generation option.

Storing used fuel at 76 reactor sites around the country is safe, but highly inefficient. Consolidating security, monitoring, and inspection efforts at CIS facilities would create significant operational efficiencies and reduce overall fuel management costs. In addition, by safely relocating robust dry-cask storage systems currently spread across 35 states, the country would appropriately begin to establish an integrated approach to used fuel management. This would start to ease the \$1 million per day financial burden on U.S. taxpayers to compensate plant operators for damages caused by the government's inaction and partial breach of contract. Removing fuel from shutdown sites also would spur economic development by allowing for the redevelopment of nuclear sites that are fully decommissioned but for the continued storage of used fuel.

DOE's goal of creating a consent-based process for one or more federal CIS facilities is a positive step. The U.S. commercial nuclear industry fully supports extensive community engagement throughout the process to identify sites, develop plans for, and build CIS facilities. DOE's process must establish and sustain inclusive, trust-based, and mutually beneficial relationships with local communities. Particular attention should be paid to the needs of disadvantaged communities, and all engagements should be guided by a principled approach to social equity and environmental justice. There is no one-size-fits-all approach that DOE can prescribe at the beginning of its siting efforts. Rather, successful implementation of DOE's consent-based siting process will consider and adapt to the vision interested communities have for their futures. But generally DOE's process should ensure:

- broad community engagement opportunities;
- advancement of social equity and environmental justice;
- availability of sufficient resources to evaluate different views;
- transparency and a rational decisionmaking process;
- flexibility in terms of the siting framework and form of consent; and
- durability of process outcomes.

This is a tall order, but fortunately DOE is not writing on a blank slate. Considerable progress has been made since 2012, when the Blue Ribbon Commission (BRC) recommended the use of a consent-based approach to site CIS facilities. DOE subsequently collaborated with members of the public, communities, stakeholders, and tribal, state, and local governments to develop a "Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste" (Jan. 12, 2017). DOE's Draft Process included eleven "general design principles" for a successful consent-based siting process.³ These general design principles identify an appropriate set of attributes against which performance can be measured.

Given that there also are privately owned CIS facilities in various stages of development, we encourage DOE to work with these private developers as they proceed to develop their facilities. Given

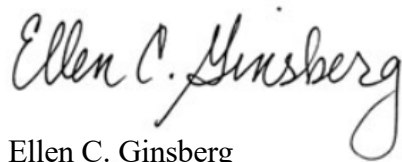
³ The general design principles outlined in the Draft Process include: (1) prioritization of safety; (2) environmental responsibility; (3) regulatory requirements; (4) trust relationship with Indian tribes; (5) environmental justice; (6) informed participation; (7) equal treatment and full consideration of impacts; (8) community well-being; (9) voluntariness/right to withdraw; (10) transparency; and (11) stepwise and collaborative decision-making that is objective and science based.

the significant investments already made by private CIS developers, it could greatly benefit DOE to find creative ways to build upon their progress in DOE's consent-based siting efforts. However, given that community engagement, siting, licensing, and many other activities for such facilities are already underway, DOE may need to adapt the phases and steps in its process if those facilities wish to be considered in DOE's plans to develop federal CIS capabilities. The federal government's efforts more than a decade ago helped catalyze this significant private sector investment in developing CIS capabilities and DOE should ensure that its process is not so prescriptive that it disadvantages these first movers.

The attached comments respond to the questions presented in the RFI and are intended to assist DOE in finalizing a process that will produce durable, widely accepted solutions to help meet the federal government's obligations to manage the nation's used fuel. We also strongly encourage DOE to evolve the process as it further engages with the public, communities, tribal, state, and local governments, industry, and other stakeholders.

Thank you in advance for your consideration of NEI's comments. If you have any questions or require additional information, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Ellen C. Ginsberg". The signature is written in a cursive, flowing style.

Ellen C. Ginsberg

cc: Alisa Trunzo, Office of Nuclear Energy, U.S. Department of Energy

NEI RESPONSE TO DOE'S RFI ON USING A CONSENT-BASED SITING PROCESS TO IDENTIFY FEDERAL INTERIM STORAGE FACILITIES

I. Area 1: Consent-Based Siting Process

Process Question 1: *How should the Department build considerations of social equity and environmental justice into a consent-based siting process?*

Before addressing how social equity and environmental justice should be built into the consent-based siting process for federal CIS facilities, we wish to emphasize that nuclear power generation contributes to social equity and environmental justice in several ways. Nuclear facilities, including CIS facilities, are among the safest and most environmentally sound industrial facilities that can be brought into a community.

Nuclear power plants are the largest source of carbon-free electricity in the United States, supplying reliable and affordable power around the clock while also protecting public safety and the environment. These attributes make nuclear power indispensable in the nation's urgent efforts to decarbonize the electric grid in response to climate change. By helping to avoid adverse climate change impacts that disproportionately affect disadvantaged communities, nuclear power contributes to social equity and environmental justice.

Nuclear energy's zero-emissions attribute also is a significant contributor to ensuring the public health of communities around the nation as nuclear plants do not release into the air harmful pollutants such as nitrogen oxide, sulfur dioxide, particulate matter, and mercury. As the industry's numerous stakeholders include communities located near nuclear power plants and fuel cycle facilities, including minority, indigenous, low-income, and other disadvantaged populations, nuclear generation contributes a cleaner, healthier environment for all communities.

Nuclear facilities also are economic engines for their communities and states. They provide jobs, local economic benefits, and community support. Indeed, the U.S. nuclear energy sector directly employs nearly 100,000 people in high-quality, long-term jobs and this number climbs to 475,000 when you include secondary jobs. Nuclear worker salaries are 50 percent higher on average than those of other electricity generation sources.

Social equity and environmental justice should be key considerations as DOE develops a consent-based siting process for federal CIS facilities. NEI and its members are committed to advancing environmental justice objectives of fair treatment and meaningful involvement of all communities regarding industry operations and activities. Industry seeks to foster and sustain inclusive, trust-based, and mutually beneficial relationships with local and disadvantaged communities. Recognizing the critical importance of a just transition to a decarbonized economy, NEI and its members established environmental justice principles that promote:

- actively engaging with disadvantaged communities to enhance mutual trust and understanding;
- integrating environmental justice considerations into business and operational practices;
- supporting efforts that help local, disadvantaged communities share in the benefits from industry operations and activities; and

- supporting public policies based on mutual respect and justice.¹

NEI's principles are broad in scope and reflect the recognition that environmental justice and social equity are to be included as fundamental parts of industry business decisions and operations.

DOE is appropriately making social equity and environmental justice core considerations in its consent-based siting efforts. As part of the initiative that it began in 2015, DOE collaborated with members of the public, communities, stakeholders, and tribal, state, and local governments to develop the "Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste" (Jan. 12, 2017) (Draft Process). DOE's Draft Process included eleven "general design principles" deemed necessary for a successful consent-based siting process:

- prioritization of safety;
- environmental responsibility;
- regulatory requirements;
- trust relationship with Indian tribes;
- environmental justice;
- informed participation;
- equal treatment and full consideration of impacts;
- community well-being;
- voluntariness/right to withdraw;
- transparency; and
- stepwise and collaborative decision-making that is objective and science based.

These general design principles explicitly recognize that social equity and environmental justice must be built into any consent-based siting process. DOE's Draft Process also recognized that appropriate planning and engagement can "provide a mechanism for addressing equity and environmental justice concerns and mediating different views" so "a community can more easily evaluate the different outcomes of a facility, including impacts on local economic development, labor supply, transportation infrastructure, public safety infrastructure, utilities, energy, and community services, and reach a conclusion about whether those impacts align with the community's values and priorities."²

As DOE finalizes and implements a consent-based siting process, it also should consider taking additional actions to:

- ensure that the agency uses the most relevant and up-to-date environmental justice-related data and tools in identifying environmental justice communities and potentially disproportionate environmental impacts to those communities;
- assess the agency's implementation of its environmental justice review methodologies and procedures, especially as they relate to identifying and engaging environmental justice communities through appropriate public outreach, engagement, and participation opportunities;
- ensure public accessibility to DOE's web-based documents, resources, and meetings by involving communities in which broadband may not be available or widely used;

¹ See NEI, "Environmental Justice Principles," <https://www.nei.org/resources/environmental-justice-principles>.

² Draft Process at 15-16.

- conduct outreach through minority business and trade organizations, schools, colleges, labor organizations, or other appropriate organizations;
- advertise meetings through locally targeted media, mailings, and the internet and by posting flyers in local shopping centers, government facilities, and other public places;
- consider innovative approaches to overcoming linguistic, institutional, cultural, economic, historical, or other potential barriers to effective participation in the decisionmaking process;
- examine other regulatory agencies' environmental justice procedures and methodologies to identify best practices and assess their potential use in DOE analyses; and
- include in DOE reviews discussion of the benefits of hosting CIS facilities, including potentially coupling CIS facilities with advanced nuclear projects to provide a non-emitting source to avoid certain disparate impacts on environmental justice communities.

In addition, DOE should distinguish between the need to identify environmental justice and other disadvantaged communities, and the need to determine whether there are any potential disproportionately significant and adverse environmental impacts on those communities. Although the identification of these communities is relevant to the way DOE establishes an open dialogue, their presence near a potential CIS facility should not automatically exclude a site from consideration. In fact, those communities may be among those in the best position to benefit from the economic and other benefits that would come from federal investment in CIS infrastructure.

Process Question 2: What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Tribal, state, and local governments will play a key role in determining consent for a community to host a federal CIS facility. It is important to use early community engagements to clearly define the roles, responsibilities, and authorities of tribal, state, and local governments in determining consent. In working with tribal, state, and local governments, DOE should not attempt to impose a restrictive, one-size-fits-all approach to consent. Potential host communities may have different local customs, different views on federal, state, and local government action, and different views on siting nuclear facilities. Those kinds of differences will require that DOE develop a flexible framework for consent (*i.e.*, the process and the form of consent may need to differ from location to location, from state to state and among tribal governments). DOE also should anticipate that those differences are likely to be manifested by communities imposing various conditions on the government. Because it is impossible to identify all the ways in which a siting process might be tailored to fit the circumstances of a particular situation, the process must be “flexible and adaptive” as DOE’s Draft Process appropriately recognizes.³ For example, in avoiding a one-size-fits-all approach, DOE must take into account that some situations may involve sites that have already achieved host community and local consent. In the context of those projects, insisting on formal expressions of consent beyond the existing host community and local consent could prove counterproductive and add years of unnecessary delay.

In addition to engaging with tribal, state, and local governments to define how they should be involved in the consent process, DOE must also work with those entities to explicitly identify the point at which consent previously given can no longer be rescinded absent new information that calls into question the ability to safely construct and operate the facility. The concept of durability is critical to a fair process, as it is manifestly unfair for consent upon which the government or private entities rely to

³ Draft Process at 8.

be later withdrawn. A consent-based siting agreement must be able to withstand changes in politics and administrations because project developers (whether DOE or a private entity) and other stakeholders need certainty to make informed decisions. Consistent with the recommendations of the Blue Ribbon Commission (BRC),⁴ the provisions of a consent—in whatever form or format—must establish certainty sufficient to facilitate prudent investment of time and money.

Process Question 3: *What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?*

Consent to site any new nuclear waste facility is unlikely to be obtained unless the host jurisdictions and public have an in-depth understanding of the project. A consent-based siting process should include the opportunity for local jurisdictions to obtain funds for independent expert assistance to help evaluate the project. Potential host communities and states will likely expect to receive funds for studies and other evaluations. By offering financial resources to the affected parties as part of the siting process, DOE can maximize the communities' ability to obtain additional information about the project and that information in turn, may enhance the likelihood of constructive engagement and collaboration.

DOE should be prepared to consider and respond to community proposals for other kinds of benefits communities might seek. For example, communities may seek to co-locate a CIS facility with research, development, or demonstration facilities including facilities to support advanced reactors, storage aging management activities, fuel cycle facilities, or disposal technologies. In other words, communities may view CIS facilities as a launch point to establishing technology innovation and energy production hubs. Thus, communities may engage DOE and seek funding to explore opportunities to co-locate and benefit from federal facilities and programs, including business development opportunities in conjunction with other federal agencies.

Process Question 4: *What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?*

The success of the consent-based siting program for a CIS facility will depend on whether DOE's process includes broad community engagement opportunities; advances social equity and environmental justice; provides sufficient resources for communities to evaluate different views; is transparent, science-based, flexible, and adaptable; and establishes durable outcomes. Implementing the program without focusing on these characteristics is likely to create impediments to success. For example, constructing a program that is unduly restrictive and uses a one-size-fits-all definition of and approach to consent is likely to be counter-productive. DOE's Draft Process outlines detailed phases and steps, but appropriately recognizes "that any consent-based process—by its nature—will have to be

⁴ See DOE, *Report to the Secretary of Energy from the Blue Ribbon Commission on America's Nuclear Future* at 56 (Jan. 2012) ("BRC Report") ("The Commission believes that defining the point at which the right to unconditionally opt out expires must be part of the negotiation between affected units of government and the waste management organization. In our view, however, the right to opt out without cause should expire no later than the time when a license application for a proposed facility is submitted."). Similarly, the BRC took "the view that the question of how to determine consent ultimately has to be answered by a potential host jurisdiction, using whatever means and timing it sees fit." *Id.*

flexible and adaptive,” meaning the final process will best achieve DOE’s goals by providing “general direction and guidance which will encourage relevant input.”⁵

Once consent is provided—in whatever form the hosting jurisdictions agree to—any agreements reached must be capable of being relied upon. Such agreements must be able to withstand changes in political views and administrations and provide sufficient certainty so that the government (and private parties) will expend time and resources with the expectation of the facility project going forward. Finding a durable mechanism that can be agreed to by the relevant parties and is enforceable will be critically important to avoiding the kinds of problems that have plagued the program thus far.

Currently, funding also is a major impediment to advancing the used fuel program. Funds need to be available for communities as well as for DOE’s efforts to obtain consent. The BRC observed, the program’s “budget perturbations” produce “substantial funding uncertainty, which can make it difficult for the implementing agency to make and honor longer-term commitments, retain staff expertise, and exercise independent judgment about programmatic priorities and resource allocation.”⁶ Providing assurance that the funding necessary to appropriately maintain the facility will always be available throughout the life of the facility is extremely important to obtaining consent and maintaining the kind of public and community trust necessary for success. Limited appropriations and congressional and agency budget practices have prevented DOE from expending the more than \$45 billion balance of the Nuclear Waste Fund for its intended purpose. To promote the success of the consent-based siting process, multiyear appropriations and access to the interest on this fund should be made available to DOE to conduct activities authorized by the Nuclear Waste Policy Act. Indeed, a portion of the fund’s annual interest income is more than sufficient to support the consent-based siting program and development of CIS capabilities as part of an integrated used fuel disposal program.

Process Question 5: *How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?*

DOE should work with interested communities at the earliest stages of the process to provide information about the project’s scope, timeline, DOE’s role, and assistance that may be available. This could include information about the term of NRC licenses and license renewal process for used fuel storage facilities as well as information about DOE’s repository program. Such information would help each hosting jurisdiction establish expectations concerning the terms, conditions, and plans associated with the duration of a CIS facility and progress concerning the development of a permanent geologic repository. For example, some jurisdictions may be interested in the approach used for DOE facilities in Idaho and Colorado whereby DOE has agreed to remove spent fuel by certain dates, and the failure to meet those deadlines triggers monetary penalties and restrictions on further fuel shipments into those states. Other jurisdictions may request conditions related to achieving regulatory or licensing milestones for a repository. Although the specific mechanisms and details associated with these types of terms and conditions are likely to vary by jurisdiction, it is important that DOE listen to the wants and needs of tribal, state, and local governments when it comes to this issue.

⁵ Draft Process at 8.

⁶ BRC Report at 74.

Process Question 6: *What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?*

DOE's Draft Process appropriately recognizes that "[t]imely and frequent engagement with stakeholders will be critical to navigate each of these decision points in a way that is tailored to the local and regional contexts of potential host sites."⁷ This is consistent with the BRC recognition that DOE should "[e]ncourage expressions of interest from a large variety of communities that have potentially suitable sites."⁸ DOE should thus identify a broad range of organizations, communities, and other stakeholders that may be interested in the consent-based siting process, particularly those in the area of communities that indicate potential interest. DOE should also look to the extensive body of work in the social sciences examining the issues surrounding facility siting and consider further opportunities to leverage international progress on siting facilities (e.g., outreach to Canada's Nuclear Waste Management Organization).

In addition to engaging tribal, state, and local governments, DOE should engage private industry and local and regional economic development organizations. This would include reaching out to those entities to evaluate the potential to build on the progress private developers already have made in licensing CIS facilities. Learning from these private commercial initiatives would provide DOE with additional information it can apply going forward. Further, the outreach to private facility developers may lead to a collaboration that could improve the timeliness with which fuel can be consolidated and reduce the costs now born by the taxpayer.

Process Question 7: *What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?*

The eleven general design principles identified in DOE's Draft Process constitute an appropriate set of attributes for implementing a consent-based siting process for federal CIS facilities. But not all general design principles should hold equal weight. For example, safety is and must remain the highest priority in implementing the process. DOE also may need to weigh or balance other principles to reach decisions. DOE should be fully transparent in how it performs such evaluations and on the tradeoffs it makes.

In addition, as DOE's Draft Process recognizes, planning for the safe and secure transportation of used fuel "is a critical activity that demands close cooperation between the implementing entity and tribal, state, and local governments along likely transportation routes."⁹ The Draft Process appropriately states that "[a]s it has done for past radioactive materials shipments," DOE will work with affected "tribal, state, and local authorities, including state regional groups, to address transportation issues and respond to the concerns of affected communities."¹⁰ Indeed, the Atomic Energy Act, Nuclear Waste

⁷ Draft Process at 13.

⁸ BRC Report at 53.

⁹ Draft Process at 3.

¹⁰ Draft Process at 3.

Policy Act, and Hazardous Materials Transportation Act establish a well-understood framework for DOE to coordinate with affected jurisdictions and address transportation planning. DOE coordination with jurisdictions potentially affected by used fuel shipments would not be improved by layering on additional the steps outlined in the Draft Process. However, DOE should consider enhancing its outreach and public education efforts to highlight the robust regulatory framework and safety record for used fuel transportation.

II. Area 2: Removing Barriers to Meaningful Participation

Participation Question 1: *What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?*

Following the principles of collaborative decisionmaking, building trust relationships with tribes, environmental justice, informed participation, and transparency will provide a solid basis for avoiding barriers that can doom the siting of a CIS facility. For example, applying sound and well-vetted environmental justice practices to DOE's community engagement activities will enhance the likelihood that relevant parties will participate. We encourage DOE to include in its process actions to:

- acknowledge and seek to overcome linguistic, cultural, and other barriers to meaningful participation and incorporate active outreach to affected minority and low-income communities;
- include minority and low-income community representation in the siting process;
- be aware of the diverse constituencies within any community and endeavor to have representation of the community as a whole; and
- seek tribal representation in the siting process in a manner that is consistent with government-to-government relations.

In addition, as noted in response to Process Question 1, DOE should ensure that local communities are aware of the availability of other types of general resources and information specific to particular sites or facilities under consideration. DOE should hold public meetings and information sessions at times and locations that will accommodate various segments of the public (e.g., offering weekday and weeknight sessions). DOE also should work with community leaders as well as local officials to determine meeting locations. In doing so, DOE should strive to obtain input on issues from as wide a range of perspectives as practicable. Some members of the public, especially those in underserved communities, may lack access to broadband technology and telephone service necessary to participate in webinars/virtual meetings. DOE should pursue reasonable alternative means for disseminating relevant information and notices to those communities.

DOE also should present information in a form that is accessible, clear, and understandable. For example, DOE should minimize technical and regulatory jargon, arrange for translations of documents when necessary, provide neutral facilitators to conduct public meetings, and use visual aids such as graphs, icons, infographics, and photos. Such measures are important given the technical nature of siting and regulating CIS facilities.

Participation Question 2: *What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?*

As discussed in response to Process Question 3, DOE's consent-based siting process should include opportunities for host communities to obtain funds for expert assistance. As discussed in response to Process Question 3 and Participation Question 1, resources to support early and thoughtful DOE engagement with a broad range of organizations, communities, and stakeholders is essential for DOE to succeed in using a consent-based approach.

Participation Question 3: *How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?*

DOE's Draft Process appropriately recognizes as general design principles informed participation and stepwise, collaborative, objective, science-based decisionmaking. The combination of these principles is key for mutual learning and collaboration with interested communities. DOE should share information and provide financial and technical resources to interested communities. Additionally, DOE should use a defined and transparent process that involves decisions based on science, siting standards, and regulatory requirements. Under such a process, DOE must demonstrate that it genuinely considers community input and ensure communities have meaningful roles in the site selection process.

Participation Question 4: *How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?*

As the BRC noted, "[i]ntergovernmental relationships will require careful attention as the U.S. nuclear waste management program is revived" because "experience shows that determined opposition at any level of government can at a minimum significantly complicate and delay, and in many cases defeat, best efforts to site a facility."¹¹ To facilitate effective engagement with affected jurisdictions, the BRC also focused on the need for transparency in the siting process, defining "transparent" as the opportunity for all stakeholders to understand key decisions and engage in the process in a meaningful way.¹² DOE's Draft Process appropriately recognizes "the central role of elected officials at the tribal or state level in consent-based siting" and the need for a transparent siting process.¹³ In implementing this process, DOE should seek to establish and maintain the information-sharing and transparency mechanisms that will be needed to build confidence in the process, and establish trust that federal CIS facilities will be sited and operated in a manner that protects the public and the environment. These information-sharing and transparency mechanisms should also cover neighboring tribes and states that may identify transboundary issues that could benefit from early and frequent DOE engagements.

¹¹ BRC Report at 58.

¹² BRC Report at 47.

¹³ Draft Process at 7, 13.

Participation Question 5: *What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?*

DOE's Draft Process notably includes "transparency" as a general design principle, stating that "[t]he siting process will be open to input throughout and transparent with respect to how decisions are made" and that "[e]very effort will be made to share information and input with all participants in the process and explain how this information and input is being considered or applied."¹⁴ DOE should make scientific and technical information available to the public for each project under consideration. DOE also would be best served to provide information in forms that can be more readily understood by those without scientific and technical backgrounds. See NEI Response to Participation Question 1.

In addition, DOE's process should include the opportunity for local jurisdictions to obtain funds for expert assistance to help evaluate the project and share information with DOE. See NEI Response to Process Question 3 and Participation Question 2. By providing an early opportunity for potential host communities and states to receive funds for independent studies, evaluations, and information sharing, DOE can help build confidence and trust in the process and minimize disputes with host jurisdictions during the licensing phase of the project. Ultimately, that should help ensure that stakeholders agree that decisions are objective and based on sound science.

III. Area 3: Interim Storage as Part of a Waste Management System

System Question 1: *How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?*

In implementing the nation's waste management program, DOE should recognize that nuclear power plants avoid adverse climate change impacts that have been shown to disproportionately affect disadvantaged communities and provide jobs, local economic benefits, and community support. In response to Participation Question 1, NEI outlined how DOE should continue to build social equity and environmental justice into its consent-based siting process for federal CIS facilities. DOE also should adopt those considerations as part of its other efforts to meet its legal obligations to manage and dispose of the nation's used fuel.

System Question 2: *What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?*

As discussed in NEI's response to Process Question 3, there may be substantial economic benefits associated with leveraging DOE's already substantial and growing investment in advanced nuclear technologies by seeking to co-locate a CIS facility with nuclear research, development, or demonstration facilities. Communities may view these opportunities as an important way to support regional development and leadership in decarbonizing the electric, transportation, or industrial sectors. DOE should discuss these additional economic benefits—in the form of construction activity, infrastructure investments, and permanent jobs—as part of the community engagement process. However, it is important that host communities be the ones to make clear what their priorities are, and

¹⁴ Draft Process at 7.

DOE can then work with other stakeholders to determine how these priorities align with the needs and goals of the federal government.

System Question 3: *To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?*

In parallel with developing CIS facilities, NEI supports the licensing, construction, and operation of a geologic repository for the permanent disposal of used fuel. Moving both programs forward in parallel with help alleviate concerns that interim storage will become *de facto* disposal. As discussed in NEI's response to Process Question 5, expectations and plans for developing a repository are likely to be a critical issue for tribal, state, and local governments interested in hosting a CIS facility.

There are many complex legal, political, social, financial, and regulatory issues relating to repository development that need to be resolved. DOE, Congress, and other stakeholders must reach consensus on the best approach to address these long-term issues. As that consensus builds, DOE should undertake to revitalize its repository infrastructure and could help demonstrate to communities interested in hosting CIS facilities that progress is being made to find durable, permanent solutions.

System Question 4: *What other issues should the Department consider in developing a waste management system?*

DOE should be mindful that the owners of nuclear plants and their electricity customers have done their part, as their contributions have resulted in the \$45 billion balance in the Nuclear Waste Fund. Although that should be more than adequate for the development of a successful program, congressional budgeting practices have prevented the use of this fund for its intended purpose. DOE should support legislation to grant access to the Nuclear Waste Fund for its intended purpose without reliance on annual appropriations process. DOE's program can only succeed if it has the resources to do so and all aspects of the program—developing CIS facilities, a permanent repository, and transportation infrastructure—would benefit if the Nuclear Waste Fund could be used in a manner that avoids the competition with other programs and the uncertainty inherent in the appropriations process.

DOE also should establish a separate office within the Department that reports directly to the Secretary and is dedicated to developing and managing an integrated nuclear waste storage, transportation, and disposal program. A dedicated office would provide a focal point for work on used fuel and high-level radioactive waste, facilitate necessary engagement with external stakeholders, and demonstrate an intent and commitment to take meaningful action. A dedicated office reporting directly to the Secretary would send a clear message that DOE is committed to discharging the federal government's statutory and contractual responsibilities.

From: Lynne Glaeske
Sent: Friday, February 25, 2022 9:11 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The long-term threat of nuclear waste, both to human beings and the environment, is the big, unsolved problem of nuclear power, isn't it? Until that problem is solved, nuclear energy cannot be considered environmentally benign -- and the DOE referring to waste sites as "interim" does nothing to make it so. The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Lynne Glaeske



This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

From: Irene Gnemi
Sent: Friday, February 25, 2022 9:50 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
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3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Irene Gnemi



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From: jerry golden
Sent: Saturday, February 19, 2022 11:18 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: 2022feb17consentBasedSitingComm.pdf; 2022feb07ammendHB0127JC1.pdf; 2022feb12opEdWasteToCleanEnergyP1 001.jpg; 2022feb12opEdWasteToCleanEnergyP2 001.jpg

Consent Based Siting Team,
In response to your request for comments on Consent-Based Siting, please see the attachments. The "2022feb17ConsentBased..." is my response. The other attachments are referenced in my comments.

I hope this will be helpful in your essential efforts to move forward with the most promising form of clean energy. Please contact me if I can be of further assistance.

Thank you,
Jerome Golden
ANS-Carlsbad chair



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RFI: CONSENT-BASED SITING AND FEDERAL INTERIM STORAGE

US Department of Energy
consentbasedsiting@hq.doe.gov
301-903-3301

Jerry Golden



17 February, 2022

Consent-based siting team,

Thank you for resuming work on consent-based siting for spent (or used) nuclear fuel. As you probably know, at this time there is an increased need for more clean (nuclear) power. Therefore, the need to address spent nuclear fuel is more urgent than when work on consent-based siting was paused in 2017.

A general comment is the surest way to succeed with consent-based siting: Create conditions that make the relationship between storage of spent fuel (and other meaningful contributions for clean energy) and existing carbon emitting industries symbiotic. This could be something like “credits” for supporting clean energy traded for “demerits” assigned to carbon emissions.

Also, consider the successful siting, planning and implementation of DOE’s Waste Isolation Pilot Plant (WIPP) project near Carlsbad, New Mexico. WIPP disposes of defense generated transuranic (TRU) waste (with a long half-life) ½ mile underground in the 250 million year old Permian salt formation. WIPP “blazed the trail” for permanent disposal of radioactive/mixed TRU. The siting and planning was done over 40 years ago. Disposal operations are ongoing since March of 1999. Similarities between WIPP and spent nuclear fuel storage include:

1. US defense is essential for the country and disposal of defense generated waste at WIPP was necessary for vital defense programs to continue.

Likewise, a solution is needed for spent nuclear fuel so progress can be made with the most promising form of clean energy (nuclear power), so the our country can do its part to meet worldwide clean energy objectives.

2. A large part of WIPP’s success can be credited to strong, ongoing support from local communities.

This same community not only supports storage of spent fuel, Eddy County and Lea County created the Eddy-Lea Energy Alliance (ELEA). The ELEA recruited Holtec International to license and operate the proposed Consolidated Interim Storage (CIS) facility for spent nuclear fuel.

3. WIPP has provided economic stability for southeastern New Mexico for over 35 years. It continues to do so through the ups and downs of the oil business.

Besides the economic benefits associated with temporarily storing spent (or used) nuclear fuel, there are much greater opportunities for recycling it and disposing of it. See the attached “Nuclear waste can become the motherlode of clean energy” article. This is nothing new. My father used to make presentations with the same message during the 1970s fuel shortage... Before DOE’s Clinch River Breeder Reactor project was shut down.

4. The WIPP project moved forward, regardless of intense opposition by a small, vocal minority. Most opponents benefit from the removal of defense waste at sites around the country. In addition, WIPP has provided great economic benefits – especially throughout New Mexico.

Likewise, those who oppose storage of spent fuel may benefit from clean nuclear power.

Page 1

RFI: CONSENT-BASED SITING AND FEDERAL INTERIM STORAGE

Specific comments on the three areas of consent based siting are provided below.

Area 1: Consent based siting process

1.1. Social equity and environmental justice

A true “level playing field” is necessary for consent based siting to work. If the department has not done so already, go to whatever extent is necessary to re-calibrate how social justice and environmental equity are defined and assessed... And made fair. A credible, fair system based in science would:

a, Recognize power, heat and energy are a basic need and give it the appropriate priority – And give credit for contributions to clean energy. That means credits for providing storage for spent nuclear fuel.

b. Ensure “credits” for existing and new clean energy are fairly determined. This would include rewarding the substantial benefit to clean energy by providing storage for spent fuel. “Demerits” would be assigned to carbon emissions.

c. Take full life cycle costs to produce clean energy into account, such as mining materials, manufacturing, infrastructure, construction, maintenance, demolition and disposal into account – whether for windmills, solar or nuclear.

d. Include adjustment factors for producing energy at peak times vs. intermittent energy (solar and windmills).

e. Screen out issues with no credible technical basis, such as beyond design basis transportation hazards.

1.2. Tribal, state and local governments

a. The role of state governments should be to work with tribal and local governments to ensure economic sustainability and viability. Safety and environmental considerations should be based on credible science. Unfortunately, most of the current legislation in New Mexico against the ELEA's CIS (HB0127 attached and SB54) appear to result from politics founded on fear of things that might have happened 50 and more years ago. However, serious consideration should be given to comments regarding the lack of clarity on how long “temporary” storage will be and the lack of a plan to complete the fuel cycle.

b. A history on the matter as I recall, was an attempt by the Mescalero Apache Nation of New Mexico to host a spent fuel storage site about 30 years ago. It was overshadowed by possible interference from the state and uncertainty about transportation routes. Votes by the nation against the project ultimately prevailed.

1.3. Benefits or opportunities

a. The credit system suggestion in item 1.1. above would encourage hosting spent fuel storage. In practice, substantial “credits” would be provided for hosting spent fuel storage. Those “credits” would then benefit production of oil and gas in the Permian Basin.

b. While it is a good idea to offer setting up industries that support interim storage, care should be exercised when starting a new manufacturing facility. From a historical perspective, problems were encountered when starting to manufacture WIPP's TRUPACT-II fleet in Carlsbad.

RFI: CONSENT-BASED SITING AND FEDERAL INTERIM STORAGE

c. Finally, the obvious: A plan to recycle spent (or used) fuel should include doing what is necessary to obtain tremendous recycling benefits (through RCRA) if real environmental justice is applied. Recycling near the storage facility would have the obvious benefit of minimizing additional transportation, in addition to great economic opportunities. A credible plan to accomplish this is likely to gain more support than opposition. Final disposal of the relatively small quantity of waste left after recycling will always be questioned. A plan would include this (consider co-locating). Please contact me if you want copies of timeline plans with decision points, etc. for development of several essential WIPP programs. Those documents are in the WIPP Records Center and should be accessible for DOE. I can provide information that will help with retrieval.

1.4. Barriers

a. You can see the foremost barrier to consent based siting in the recent amendment to New Mexico HB0127 in the attachment. This is the obvious lack of a path forward from storage. As suggested in 1.3.c., it is difficult to sell storage without a final solution.

b. Concerns about transportation accidents appear to be a next most common objection. That is regardless of the incredibly safe record of transportation as documented in the "Historic Review of the Safe Transport of Spent Nuclear Fuel", FCRD-NFST-2016-00474, Rev1. Concerns raised about beyond basis transportation accidents are just not credible.

c. Realize that some people who are intractably against nuclear projects. A way to mitigate this obstacles would be to offer reasonable "relocation assistance" packages. This may seem radical, but progress to significantly reduce carbon emissions hangs in the balance. DOE is sure to be time and money ahead if they do this.

1.5. Duration of storage

a. The obvious answer is suggested in 1.3.c. above - A plan is needed to recycle used fuel and then dispose of what remains.

b. In order to be credible, the plan must be backed-up with evidence that it will be accomplished. Making a commitment to use funds collected for the 1987 Nuclear Waste Policy Act may serve the purpose.

1.6. Organization/community partnering

a. Consider working with groups like those who provide unwavering support for WIPP and the ELEA CIS:

- The mayors and city councils of interested communities
- Local, state and national Departments of Development and Commerce
- Interested companies, such as Urenco for reprocessing, Holtec for the ELEA and Waste Control Specialists in West Texas for storage
- Professional societies, such as the American Nuclear Society (national and local chapters), ASME, ASNT, etc.
- Local business associations and potential subcontractors
- Emergency responders in the areas of interest and along transportation routes as was done with WIPP's States Emergency Response Plan (STEP) program
- Electric commissions and utility companies (if credits for supporting clean energy are properly administered)
- Recommend that nearby DOE branches and contractors support activities which promote spent fuel storage.
- Note: The CBFO position is difficult to understand. Last year, I contacted WIPP's Amentum Public Relations department for information to write an OpAd in support of the ELEA CIS. They refused to provide the information and asked me to NOT mention the safety of WIPP transportation in the OpEd.

RFI: CONSENT-BASED SITING AND FEDERAL INTERIM STORAGE

1.7. Other issues

a. An apparent lack of understanding in the public about nuclear power and associated regulations should be considered.

- Providing education may be helpful for those with open minds. Information on the scales of difference between amounts of clean energy released by strong nuclear bonds in atoms of nuclear fuel would be a good place to begin. Then compare that with the carbon and much less energy produced by the weak electron valence bonds through oxidation (or combustion) of other fuels. From there, other topics would be more easily understood. The public would probably be more receptive if good graphics and/or animation were used – And they would be more likely to retain the lesson.

- Process comments based on credibility – This is probably being done already in some form.

- Per 1.4.c. Offer “relocation assistance” for those who may be affected and are against the project.

b. Another benefit of planning through the whole fuel cycle (recycling and disposal) as suggested in 1.3.c., 1.4.a. and 1.5.a: A plan will help identify suitable locations, while unsuitable locations will be evident. DOE could then focus their limited resources on the best prospects. For example, if the plan reveals (as is likely) the best use of time and resources is to co-locate storage, recycling and final disposal, it would be expedient to identify locations with:

- Suitable geology for disposal

- Supportive community

- Resources for processing used fuel (or that can be adapted for it)

- Suitable access by transportation routes.

c. A good plan would also demonstrate good stewardship of DOE resources, while instilling public confidence.

Area 2: Removing barriers to meaningful participation

2.1. Barriers to participation

a. Lack of knowledge or wanting to understand – Counter that fuel storage supports clean energy goals

b. Process comments based on credibility as suggested in 1.7.a

c. Education as suggested in 1.7.b.

d. “Relocation assistance” as suggested in 1.4.c. and 1.7.a.

2.2. Resources needed for participation

a. If you don’t have this already, consider setting up collaborative/interactive websites with information as suggested in 1.7.b. (attractive graphics would help).

b. There may be benefits in collaborative websites accommodating comments so pros and cons can be debated.

c. Reimburse expenses for essential support, such as the trip by Carlsbad’s delegation to Santa Fe. Surprisingly, they were successful this week advocating for ELEA’s CIS (by getting HB0127 and SB54 defeated).

2.3. Maximizing opportunities with interested communities

a. Change wording from “spent fuel” and instead call it “used fuel” as Holtec and others do.

b. Education as suggested in 1.7.b. and 2.1.c.

c. Set up collaborative/interactive websites as suggested in 2.2.b.

d. Provide a credible plan through the whole fuel cycle (recycling and disposal) as suggested in 1.3.c., 1.4.a., 1.5.a. and 1.7.b. This will address a significant number of objections.

RFI: CONSENT-BASED SITING AND FEDERAL INTERIM STORAGE

2.4. DOE effective engagement

- a. As suggested in 1.6.a., encourage nearby DOE branches to host or participate in hearings and forums that support spent fuel storage. Also recommend and accommodate contractor participation these and other related activities.
- b. Work with companies who wish to participate in spent fuel storage to create informative exhibits like WIPP's TRUPACT-II Road Show. It operated successfully for many years. The Road Show familiarized first responders and residents along the WIPP transportation routes with TRUPACT-IIs. One the three Road Show units is still on display in front of CBFO's Skeen-Whitlock Building in Carlsbad.
- c. Areas inside DOE offices can be set aside for educational displays – Like the lobby of the Skeen-Whitlock Building. This creates awareness among DOE employees, contractors and visitors. Some displays were taken to local and state events throughout the country.
- e. Participate in trade shows and other suitable venues to increase public awareness.

2.5. Information needed

- a. As suggested in 1.6.a. and 2.4.a, instruct local DOE employees and contractors to support and promote spent fuel storage.
- b. Set up collaborative/interactive websites as suggested in 2.2.b. and 2.3.b.
- c. In addition to a credible plan through the whole fuel cycle (recycling and disposal) as suggested in 1.3.c., 1.4.a., 1.5.a., 1.7.b. and 2.3.c., provide lists of available reports and information. This documentation will inform them so they can answer questions and address concerns.

Area 3: Interim storage as a part of a waste management system

3.1. Ensuring social equity and environmental justice

- a. As suggested in 1.1 and 1.3.a., do whatever is needed at whatever level is necessary to create a true “level playing field”. This could be the basis for making consent-based siting to work. If the department has not done so already, re-calibrate how social justice and environmental equity are defined and assessed.

3.2. Benefits/drawbacks to co-locating

- a. The obvious benefit is eliminating extra transportation... And possibly additional handling.
- b. As suggested in 1.3.c., 1.4.a. , 1.5.a. and 1.7.b., co-locating is likely the best use of time and resources and the quickest path to storage, recycling and final disposal.
- c. Planning to co-locate would expedite selection of a suitable site(s) and transportation routes. This would instill confidence in stakeholders, while demonstrating good stewardship of DOE resources.
- d. Drawbacks to adding new industry to an area, such as manufacturing and research are limited resources in the remote areas most suitable for spent fuel storage. Based on experience with setting up the TRUPACT-II Manufacturing Facility in Carlsbad (discussed in 1.3.b.), consideration should be given to provide a great amount of flexibility when scheduling those additions. For example, in Carlsbad, when oil is booming, infrastructure, labor, housing and other resources are in short supply and strained. However, when there is a downturn in oilfield work, those resources go begging for people to use them. This was the case in 1985 when the local community pushed DOE to ramp up work for WIPP in Carlsbad.

3.3. Interim storage relating to permanent repository

- a. Establishing not only a permanent repository, but also a reprocessing facility is essential for temporary storage to make sense.
- b. Other benefits are identified in 3.2. above.

RFI: CONSENT-BASED SITING AND FEDERAL INTERIM STORAGE

3.4. Other issues for waste management system

a. In addition to items identified in 1.7.b., consider transportation access:

- Conditions of the planned rail or road transportation route
- Climate for average days per year of safe travel... And weathering of equipment
- Terrain, such as the flat, level land around Carlsbad providing safe travel, with excellent visibility for miles.

b. In addition to stakeholder and community support, consider availability of workforce

c. Evaluate availability or access to construction and fabrication materials

d. The credible plan for the whole fuel cycle suggested in 1.3.c., 1.4.a., 1.5.a., 1.7.b., 2.3.c. and 2.5.c, should be based on conservative resource and time estimates. Doing things the first time always requires more of both than established operations. "Decision points" can be identified for uncertainties. Realistic planning for regulatory interactions may consist of iterative activities in series. Plans, resource allocation and schedules can be optimized when the project is in motion. Remember, management of spent fuel has been a long time in the making.

e. Naturally, safety will be a top priority. Requirements, roles and responsibilities between DOE and contractors should be carefully thought through and clearly defined before starting work.. Provide knowledgeable support staff who can provide clarification and direction regarding requirements on an ongoing basis. If DOE wants to be involved in details, they should do so before commitments are made. Then stick with decisions that are made. Big problems result from redirection and interference when it is too late in the game.

f. Last, but not least, build trust – in your employees, contract employees, suppliers, the community and regulators. - Indemnify them. As mentioned in 1.5.b., the 1987 Nuclear Waste Policy Act has been accumulating funds for many years. Build trust by making those funds available to cover any liabilities associated with preparing, transporting, storing, recycling and disposing of spent fuel.

Thank you for considering my comments. Please contact me if I can provide additional information.

Jerome Golden,
ANS-Carlsbad chair

**FIFTY-FIFTH LEGISLATURE
SECOND SESSION, 2022**

February 7, 2022

Mr. Speaker:

Your **JUDICIARY COMMITTEE**, to whom has been referred
HOUSE BILL 127

has had it under consideration and reports same with
recommendation that it **DO PASS**, amended as follows:

1. On page 1, line 12, after "PROHIBITING", strike the remainder of the line, strike line 13 through "WASTE" and insert in lieu thereof "THE ISSUANCE OR CERTIFICATION OF A PERMIT FOR THE CONSTRUCTION OR OPERATION OF A DISPOSAL FACILITY FOR SPENT FUEL OR HIGH-LEVEL WASTE, UNLESS A PERMANENT REPOSITORY IS IN OPERATION".

2. On page 2, line 14, after "areas", insert ", including economic, water quality and environmental justice impacts,".

3. On page 3, line 19, strike the first occurrence of "or" and insert in lieu thereof a comma and remove the brackets and the line through "or spent fuel".

4. On page 3, line 22, after "that", strike the remainder of the line, strike all of line 23 and strike line 24 through "that".

5. On page 4, line 2, after "waste", insert ", unless a repository, as defined in 42 U.S.C. 10101(18), is in operation".

Respectfully submitted,

Gail Chasey, Chair

Adopted _____
(Chief Clerk)

Not Adopted _____
(Chief Clerk)

Date _____

**FIFTY-FIFTH LEGISLATURE
SECOND SESSION, 2022**

HJC/HB 127

Page 2

The roll call vote was 7 For 0 Against
Yes: 7
No: 0
Excused: Cook, Egolf, Louis, Nibert, Rehm, Townsend
Absent: None

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PINION

Nuclear waste can become the motherlode of clean energy

/ Ed McGinnis | February 12, 2022 12:05 AM

"One person's trash is another person's treasure." How many times have we heard this expression?

There are endless polarizing debates including how and where to store nuclear waste safely for 10,000-plus years (due to radiation levels harmful to humans). But little attention is given to the fact that only 4% of the energy value has been consumed from our used nuclear fuel, which is actually a national treasure. In fact, the amount of untapped energy in America's used nuclear fuel could power the world for almost 20 years. That's the motherlode of clean energy.



So how do we tap into this fantastic clean energy source? It's clear as day: We recycle it.

Through already established technologies, we can turn a 10,000-year problem into a manageable 300-year project. Such action would offer a reevaluated opportunity for nuclear energy and give our nation a chance in meeting our climate goals. Unlike geologic repositories and interim storage, recycling de-risks nuclear energy buildup and ensures a cleaner planet for all humanity.

Don't take my word for it — just ask the French, the Russians or the Chinese countries don't have problems with nuclear waste because they don't have nuclear waste holding them back. Neither should we.



is possible.

And the value proposition doesn't end there. In a classic trash-to-treasure story, a single recycling plant the size of a football field can literally produce 40% of our nation's current nuclear fuel requirements. Doing so puts the United States back on the playing field and boosts our efforts to reestablish our critical nuclear infrastructure. In concert with current uranium miners and enrichment facilities, a nuclear recycling facility rationalizes additional investment in nuclear fuel production and decouples us from Russian and Chinese dependence. American energy independence is absolutely attainable through this process of recycling nuclear waste.

Looking back, there were huge implications and consequences for our decision as a nation to forgo recycling. Today, waste ranks as the primary cause of public opposition to nuclear power. Twelve states have moratoriums on nuclear facility construction. There is no doubt that yesterday's nuclear waste is holding back the nuclear reactors of tomorrow.

The good news is the Department of Energy is already committed to supporting the buildup of next-generation reactors. The bad news is that under current U.S. law, we continue to classify a valuable treasure as waste and completely ignore the vast potential for clean energy production and so much more.

This leaves us with a choice: We can either saddle future generations with a huge unresolved problem or take the logical step to recycle and offer a future of clean energy, abundance, and prosperity.

Our current energy demand and future projections should provide the road map for whether to treat this material as trash or treasure. As I mentioned, France has been recycling nuclear fuel for over 30 years, so what are we waiting for? The U.S. nuclear energy sector has the know-how, technology, and the companies to utilize this treasure effectively as well. All it takes is the will to address used nuclear fuel for what it is: one of the greatest assets of this generation.

Nuclear power is without a doubt the most reliable clean source of energy to power our nation. With recycling as the bedrock of the second nuclear era, America can offer a clean, safe, secure future.

Ed McGinnis, a 30-year veteran of the Department of Energy and former assistant secretary of the Office of Nuclear Energy, is CEO of Curio.

ist In...

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From: jerry golden
Sent: Saturday, February 19, 2022 11:29 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage - Added Attachment
Attachments: 2022feb07ammendHB0127JC1.pdf

Consent Based Siting Team,

Here is another attachment that was inadvertently omitted from my earlier e-mail. Please include with the other 3 attachments to earlier e-mail.

This attachment is an amendment to a bill aimed at preventing storage of spent fuel in New Mexico. Yesterday I was told that bill and its companion bill (HB0127 and SB54) were not passed.

Please contact me if I can be of further assistance,

Jerome Golden
ANS-Carlsbad chair

From: jerry golden [REDACTED]
Sent: Saturday, February 19, 2022 7:17 PM
To: consentbasedsiting@hq.doe.gov <consentbasedsiting@hq.doe.gov>
Subject: RFI: Consent-Based Siting and Federal Interim Storage

Consent Based Siting Team,

In response to your request for comments on Consent-Based Siting, please see the attachments. The "2022feb17ConsentBased..." is my response. The other attachments are referenced in my comments.

I hope this will be helpful in your essential efforts to move forward with the most promising form of clean energy. Please contact me if I can be of further assistance.

Thank you,
Jerome Golden
ANS-Carlsbad chair



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**FIFTY-FIFTH LEGISLATURE
SECOND SESSION, 2022**

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1. On page 1, line 12, after "PROHIBITING", strike the remainder of the line, strike line 13 through "WASTE" and insert in lieu thereof "THE ISSUANCE OR CERTIFICATION OF A PERMIT FOR THE CONSTRUCTION OR OPERATION OF A DISPOSAL FACILITY FOR SPENT FUEL OR HIGH-LEVEL WASTE, UNLESS A PERMANENT REPOSITORY IS IN OPERATION".

2. On page 2, line 14, after "areas", insert ", including economic, water quality and environmental justice impacts,".

3. On page 3, line 19, strike the first occurrence of "or" and insert in lieu thereof a comma and remove the brackets and the line through "or spent fuel".

4. On page 3, line 22, after "that", strike the remainder of the line, strike all of line 23 and strike line 24 through "that".

5. On page 4, line 2, after "waste", insert ", unless a repository, as defined in 42 U.S.C. 10101(18), is in operation".

Respectfully submitted,

Gail Chasey, Chair

Adopted _____
(Chief Clerk)

Not Adopted _____
(Chief Clerk)

Date _____

**FIFTY-FIFTH LEGISLATURE
SECOND SESSION, 2022**

HJC/HB 127

Page 2

The roll call vote was 7 For 0 Against
Yes: 7
No: 0
Excused: Cook, Egolf, Louis, Nibert, Rehm, Townsend
Absent: None

.222553.2

Z:\CommRep\HB0127JC1.wpd

From: John Gordon
Sent: Sunday, January 30, 2022 12:51 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI Consent Based Siting and Federal Interim Storage

Recipients

There is NOTHING defensible about the concept of bribing the poor and powerless with money.

Please stop this now.

John Gordon



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From: Gothard, Greg (EGLE)
Sent: Friday, February 18, 2022 7:22 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage comments
Attachments: DOE Consent Based Siting comments.docx

Please see the comments in the attached documents per the RFI questions (bullet points)

Greg

Greg Gothard | Physicist | [REDACTED]
Radiological Protection Section | Radiological Emergency Preparedness Unit
Materials Management Division | Michigan Department of Environment, Great Lakes, and Energy
[Follow Us](#) | [Michigan.gov/EGLE](https://michigan.gov/EGLE)



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Comments from Michigan Department of Environment, Great Lakes, and Energy
Radiological Protection Section

Contact: Greg Gothard

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?
 - Continue to engage with regional groups and stakeholders throughout the process
 - Coordinate with existing local, Tribal, and state environmental justice offices
2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?
 - The Department should consider some form of cost recovery for local, state, and Tribal governments participating in the identification process. Many may not have the resources readily available to dedicate the staffing required to participate in the siting process.
3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?
4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?
 - Whole community understanding and acceptance. One possible way to address would be through engagement by not only DOE, but other agencies as well, much like is done at the NTSF for states and Tribes. Answer the questions and give the information.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?
 - Jointly with the State, Tribes, and other agencies as a unified front. Be flexible on meeting times and formats (e.g., daytime, evening, remote-in options, etc.)
6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?
7. What other issues, including those raised in the *Draft Consent-Based Siting Process* (<https://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf>), should the Department consider in implementing a consent-based siting process?

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?
 - Availability to participate in the process. Timely notices of any communications as well as scheduling of meetings considering both the state, Tribal, and working public.
2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?
 - Consider resources provided to allow community members to be able to participate.
 - Provide educational workshops for those seeking to learn more. Possibly multi-agency.
3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?
4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?
5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?
2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?
3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?
4. What other issues should the Department consider in developing a waste management system?
 - As of right now, there are competing entities developing interim storage in the country (2 private organizations and the Department). The Department is working separately from these essentially creating a race to successfully create a facility and begin moving spent nuclear fuel (SNF). Many concerns in communities revolve around the integrity of private companies moving SNF appropriately. Most stakeholder organizations are happy with what the Department proposes should they be the ones moving the fuel. If the Department could in any way assist in this endeavor then there may be a more successful end result.

From: Schuyler Gould
Sent: Tuesday, March 1, 2022 10:36 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI Consent-Based Siting
Attachments: DOE-RFI-Comments.docx; DOE-RFI-Comments.pages

Schuyler Gould



Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

The Department should consider the past performance of both the nuclear weapons industry and the nuclear power industry with regard to social equity and environmental justice. Those areas already burdened by both industries should not be asked to shoulder even more environmental degradation. There is no environmental justice, in particular, in locating CIS facilities in Andrews, Texas, or southeastern New Mexico, as proposed by Independent Storage Partners and Holtec International. This area has garnered no benefit from nuclear power. More to the point, its people, from the dawn of the nuclear age, have suffered disproportionate environmental degradation from above and below-ground nuclear warhead testing, from the callous exploitation and poisoning of uranium mine workers, especially those from Native American communities, and from the wholesale abandonment of upwards of thousands of uranium mines. On top of this, the oil and other extractive industries in the Permian Basin have left thousands of polluted sites, some highly so, many wholly abandoned.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

Inasmuch as the Department has failed to live up to its commitments regarding the final disposition of High Level Radioactive Waste, any contract with any community should have firm guarantees and progressive penalties, agreed to by both parties and not able to be abrogated for any reason, including any legislative act by Congress, for any failure by the Department to live up to its commitments.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?
7. What other issues, including those raised in the *Draft Consent-Based Siting Process* ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

All players should have full access, in real time and subsequent record-keeping, to all deliberations by the Department relevant to the decision-making process.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?
3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?
4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?
5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Communities need unrestricted access to the truth regarding the harmful effects of radioactivity and radioactive waste and the full implications of long-term storage of High Level Radioactive Waste as developed by independent experts without any ties to weapons development or the nuclear power industry.

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

The only logical co-location of facilities, and as provided for in the NWPA as Amended, is the establishment of a CISF in the immediate vicinity of a permanent, deep-geologic repository, for the purpose of processing and packaging the waste before its placement in the repository.

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

As provided for in the NWPA as Amended, no interim storage facility should be licensed until a permanent repository has been licensed, with the following exceptions: at those NPP's whose continued storage of HLW is compromised--by the effects of climate change(San Onofre Power Station, and others), by new evidence of seismic vulnerabilities, or by the possibilities of upstream dam failures--the waste should be moved, to a site as close as is reasonably possible to where it is currently stored, according to Principles for Safeguarding Nuclear Waste at Reactors (Hardened On-Site Storage, HOSS).

<https://ananuclear.org/hoss/>

4. What other issues should the Department consider in developing a waste management system?

Schuyler Gould

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2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing,

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3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

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seismic vulnerabilities, or by the possibilities of upstream dam failures--the waste should be moved, to a site as close as is reasonably possible to where it is currently stored, according to Principles for Safeguarding Nuclear Waste at Reactors (Hardened On-Site Storage, HOSS).

<https://ananuclear.org/hoss/>

4. What other issues should the Department consider in developing a waste management system?

From: Rochelle Gravance
Sent: Friday, February 25, 2022 11:53 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Rochelle Gravance



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From: Sadie Green
Sent: Friday, March 4, 2022 12:04 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal interim storage

I am a 67-year-old world citizen concerned about the future of civilization. No safe, permanent solution has yet been found anywhere in the world - and may never be found - for the nuclear waste problem. "Beyond Nuclear" advocates for an end to the production of nuclear waste and for securing the existing reactor waste in hardened on-site storage. Indefinitely long, to permanent, surface storage at federal CISFs would achieve only very short-term effectiveness, at best, compared to the ongoing threat of irradiated nuclear fuel and highly radioactive waste. Loss of institutional control anytime over the next million years would mean the potential for catastrophic releases of hazardous radioactivity into the environment, which would harm people and other living things downwind, downstream, up the food chain, and down the generations, potentially out to great distances, depending on wind and water-driven flow over long periods of time. Please consider the generations to come.

Sadie Green. [REDACTED]

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From: Robert Gregory
Sent: Tuesday, November 30, 2021 9:46 PM
To: Consent Based Siting
CC: Nuclear Matters; Rep. Tom Reed; Kirsten E. Gillibrand
Subject: [EXTERNAL] comment for you about location of nuclear waste

"The U.S. Department of Energy today issued a request for information on using a consent-based siting process to identify sites to consolidate and temporarily store the nation's spent nuclear fuel."

Since we have been assured time and again that nuclear waste is safe and that the ways to store it are all safe, then it behooves you to store it where it originated - around Washington DC would be the best location especially close to or under the pentagon where the need for nuclear weapons is greatest. Use the Pentagon's money for this, because they have more money than any other entity on earth. Thank you for asking for submissions.

--

"Each time a man stands up for an ideal, or acts to improve the lot of others, or strikes out against injustice, he sends forth a tiny ripple of hope, and crossing each other from a million different centers of energy and daring, those ripples build a current which can sweep down the mightiest walls of oppression and resistance."

Robert F. Kennedy


Pacific still means peace,

bob gregory

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From: Kerster, Courtney, GOV
Sent: Friday, March 4, 2022 12:43 PM
To: Consent Based Siting
CC: Kenney, James, NMENV; Nouri, Ali; Witteman, Aimee; Bato, Christian
Subject: [EXTERNAL] Consent-Based Siting Comments from Governor Lujan Grisham
Attachments: Gov MLG Consent Based Siting Comments.pdf

Please see the attached letter from Governor Michelle Lujan Grisham, submitted as comment on DOE's request for information on consent-based siting of federal facilities for interim storage of high-level nuclear waste.

Thank you,
Courtney

Courtney Kerster
Senior Advisor
Office of Governor Michelle Lujan Grisham

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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March 4, 2022

The Honorable Jennifer Granholm
Secretary
U.S. Department of Energy
1000 Independence Ave., S.W.
Washington, DC 20585

RE: Consent-Based Siting Process to Identify Federal Interim Storage Facilities

Dear Secretary Granholm,

On December 1, 2021, the U.S. Department of Energy (DOE) requested information on how to site federal facilities for the temporary, consolidated storage of spent nuclear fuel using a consent-based approach.

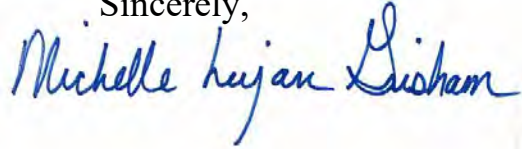
While the New Mexico Environment Department will provide detailed comments, I write to reemphasize that the State of New Mexico remains firmly opposed to the interim storage of spent nuclear fuel and high-level waste within or near our borders, including as proposed in license applications submitted to the Nuclear Regulatory Commission by Holtec and Interim Storage Partners.

The DOE's effort to seek input on a consent-based siting process for federal interim storage facilities stands in stark contrast to the process currently underway for commercial interim storage facilities. I firmly believe that the continuation of this deeply flawed, non-consent-based process for private facilities undermines trust and presents an insurmountable barrier to finding a long-term solution for disposal of high-level waste.

Additionally, the siting of a federal or commercial interim storage facility must not detract from meaningful efforts to find a permanent repository for high-level waste so that interim storage does not become indefinite storage. The State of New

Mexico continues to oppose any interim storage of federal or commercial high-level waste within or near our borders but remains willing to work with the Biden Administration toward a meaningful and comprehensive consent-based solution to the national problem of the permanent disposal of nuclear waste.

Sincerely,

A handwritten signature in blue ink that reads "Michelle Lujan Grisham". The signature is fluid and cursive, with the first name "Michelle" being the most prominent.

Michelle Lujan Grisham
Governor

From: KarenD Hadden
Sent: Thursday, March 3, 2022 3:42 PM
To: Consent Based Siting
Subject: [EXTERNAL] Consent-Based Siting Comments

Re: RFI: Consent-Based Siting and Federal Interim Storage

Dear DOE;

Please accept the following comments, submitted on behalf of the Sustainable Energy and Economic Development (SEED) Coalition, the Tarrant County Coalition for Environmental Awareness and the Lone Star Sierra Club. Thank you.

Comments to DOE on Consent-Based Siting

Area 1 Consented Based Siting Process

1) How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

Informed consent is a great principle. It must be implemented in good faith in order to be meaningful. There can be no equity and no environmental justice if those most impacted are ignored, as has been the case so far. The fact that DOE held meetings in 2016 at locations around the country, but not a single one in Texas or New Mexico was a glaring omission that speaks volumes.

Many organizations and individuals across the country participated in DOE meetings held in 2016, often at great personal expense. The resulting Summary of Comments missed a great deal, failing to capture the testimony and viewpoints of participants and falling far short of the analysis that should have been conducted. If DOE had listened more closely public input back then, an effective consent-based siting policy could already be in place to help guide the siting process. The massive investment of time and financial resources could have provided timely results.

A much anticipated DOE consent-based siting policy was reportedly going to be in place in early 2021, but this did not occur. Action was delayed. This second round of public input comes late, long after the policy should have been in place and long after the NRC issued a consolidated interim storage facility license for a Texas site on September 13, 2021.

2) What role should Tribal, State and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Consent-based siting policies should allow Tribal, State and Local Governments to legally reject CISF facilities if these entities do not consent. There is a uniform message from all levels of government and communities in Texas and New Mexico. There is no consent for Consolidated Interim Storage Facilities (CISFs).

Texas [Governor Greg Abbott](#) has strongly opposed CISF for either Texas or New Mexico, as has Governor Michelle Grisham Lujan. Abbott called the licensing unwelcome and illegal. He has expressed concerns about

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impact on Permian Basin oilfields, and about potential terrorist actions. Attorney Generals from both states filed suit against the CISF proposals. A [filing](#) by the State of Texas, Governor Greg Abbott and TCEQ in the Fifth Circuit Court of Appeals called the CISF license issued by NRC to Interim Storage Partners unlawful and requested that it be vacated.

A [Bipartisan letter from Congressional Representatives](#) to Appropriations Chairwoman DeLauro and Ranking Member Kay Granger opposed NRC licensing of consolidated interim storage in Texas and New Mexico and supported bill and report language that would deny CISF applications without having consent.

[Congressman August Pfluger](#), who has Andrews County in his district, called NRC's licensing of consolidated interim storage a "massive blunder" and urged the NRC to reverse course.

Over 60 [Texas State Representatives and 6 Senators](#) wrote to the NRC and DOE in 2021, expressing opposition to Consolidated Interim Storage. Please include these Texas State Legislature comments in DOE consent-based siting considerations.

Legislative Action: The Texas Legislature passed [HB 7](#) in 2021, prohibiting the storage or disposal of high-level radioactive waste and preventing the Texas Commission on Environmental Quality from issuing state permits needed for Consolidated Interim Storage. The bill had overwhelming bipartisan support, passing unanimously in the Senate and by a vote of 119-3 in the House.

80 organizations from around the country wrote to the NRC opposing CISF proposals and raising concerns about transportation risks nationwide. Over 40,000 public comments were submitted to the DOE in opposition to high-level radioactive waste plans and four online hearings for ISP's final Draft Environmental Impact Statement were solidly packed with opponents.

Six Texas counties and three cities passed resolutions opposing consolidated interim storage, as has the Midland Chamber of Commerce. Andrews County, the potential CISF host county, reversed its original position and voted to oppose high-level radioactive waste storage. **Collectively, the resolutions represent the voices of 5.4 million Texans.** Opposition has become part of the Texas Democratic Party Platform and Catholic Bishops have written in opposition to CISF as well. The mayor of Ft. Worth wrote to the Governor about concerns and [two school districts](#) wrote letters as well.

In New Mexico, resolutions opposing CISF were passed by numerous cities and counties, the All Pueblo Council of Governors, the Churchrock Chapter of the Navajo Nation, the Navajo Nation Diné Uranium Remediation Advisory Commission and the New Mexico Cattle Growers Association.

Resolutions Passed in Opposition to Consolidated Interim Storage

Texas: Cities of Denton, Midland, San Antonio

Counties: Bexar, Dallas, Midland, Nueces, El Paso, Andrews

Midland Chamber of Commerce

Texas Democratic Party, part of state platform

New Mexico: Cities of Lake Arthur, Albuquerque, Jal, Gallup, Belen, Las Cruces

Counties: Bernalillo, Santa Fee, McKinley

Churchrock Chapter, Navajo Nation

Navajo Nation Diné Uranium Remediation Advisory Commission

All Pueblo Council of Governors

New Mexico Cattle Growers Association



Based on clear overwhelming opposition at every level of Tribal, state and local governments, DOE state clearly that the Texas and New Mexico CISF's fail to meet any kind of consent-based siting standard, and should be taken off the table.

Tribal, state and local governments should be able to reject Consolidated Interim Storage proposals if they do not consent. People in all counties along likely transport routes should have a voice too, since they would be put at risk as well. County Judges should have the ability to consent or reject Consolidated Interim Storage proposals as well.

3) What benefits or opportunities could encourage local, State and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

CISF's are a bad idea for Texas, New Mexico or anywhere else. Risks would be reduced by using hardened on-site storage instead. Waste should be moved the shortest distance possible if necessary in order to prevent problems from sea level rise.

4) What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

CISF's would waste US taxpayer dollars should not be used support efforts toward this goal. Instead, please help direct spending to less risky options, including hardened on-site storage, improved disposal technologies and options for deep geologic disposal.

5) How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

Improvement is needed. In 2016 DOE hosted stakeholder meetings in numerous locations across the country, none were held in Texas or New Mexico, the states targeted for high-level radioactive waste storage. Are people in targeted states not “stakeholders” in the eyes of DOE? Concerned citizens had to travel at great expense to other states to be able testify.



The duration and plans of Interim Storage Partners and Holtec, inc. are included in the NRC license applications. Possible storage timeline extensions beyond the initial 40 years are discussed, but technical requirements are not based on long-term storage. Be honest about the fact that de-facto permanent storage is likely to result, that storage containers may crack and leak, and contamination could result. Repackaging may be needed but no dry cask transfer facilities are planned for either the Texas or New Mexico sites. The waste could easily stay at either CISF location for decades longer than originally planned, creating problems.

The public should be informed that the International Atomic Energy Agency (IAEA) considers 100 years to be [“long-term storage” \(pg 49 of 67\)](#), giving the following warnings and cautions:

6.87. Additional technical considerations for long term storage of waste are:

- (a) Engineered systems, facilities and institutional controls should be more robust or should be more actively maintained. If possible, passive safety features should be used.
- (b) Information should be retained in a readable and understandable form for future generations. For long periods of time, the deterioration of records (whether material or electronic) will be more significant.
- (c) Inadvertent or deliberate intrusion into waste storage facilities may be more likely over longer time periods and intrusion should be considered in the safety assessment.

6.88. For storage beyond the original intended period of storage, the design life of the storage facility and that of the waste packages may be exceeded. This should prompt a re-evaluation of the storage strategy, which may include a re-evaluation of the initial design, operations, the safety assessment and other aspects of the waste storage facility.

6.89. For storage beyond the original intended period, testing, examination or evaluation may be necessary to assess the integrity of waste packages. Potential problems with waste packages should be considered in advance of the need for physical action (such as overpacking or placing the waste into new waste packages). In some cases it may be justified to move waste packages into a more robust storage facility rather than to overpack or replace them.

The record needs to be made very clear..

Texas and New Mexico have NOT in the past and still do NOT consent to high-level radioactive waste storage.

DOE implied at several 2016 meetings that Texas and New Mexico want high-level radioactive waste. This was not true then, and is not true now.

A vote finalized by Andrews County Commissioners on January 20, 2015 apparently served as the basis for DOE's portrayal of Texans as being in favor of CISF. It was signed by the County Judge and four commissioners. Andrews is the only Texas county likely to benefit economically from the proposal, so their support was not a surprise. The voices of over 29 million other Texans were ignored.

Since then, strong public pressure led to Andrews County reversing their position. The Commission passed a [resolution](#) opposing consolidated interim storage in July, 2021.

At a 2016 DOE meeting in Arizona, speakers from Texas and New Mexico objected to DOE's misrepresentation of presumed support. They clearly relayed the message that "We do not consent." However, DOE's Summary of Comments fails to reflect the objections raised by numerous speakers who had travelled a long way at great expense to be heard. The banner in shown below was displayed at that DOE meeting by people from New Mexico and Texas.



6) What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

This question is very after the fact. There is clear opposition to Consolidated Interim Storage at the local level and at every level of government in Texas and New Mexico. Please acknowledge that opposition. There is no consent to Consolidated Interim Storage facilities proposed for either state.

7) What other issues, including those raised in the Draft Consent-Based Siting Process should the Department consider in implementing a consent-based siting process?

It is inappropriate to use taxpayer dollars to push CISF. Transport of this waste should be limited and only occur if permanent disposal can be achieved. These facilities would create public health, environmental, economic and security risks. In the Southwest, there are temperature extremes, wildfires and intense storms. The number of earthquakes is increasing dramatically and there are sinkholes. The Permian Basin region is the nation's largest source of oil and gas. This is not the right place for nuclear waste, and transporting it would create risks across the nation. Transport is risky, and should only occur if the destination is a permanent disposal site. Other than that, waste should be moved as little as possible, for example to get it off of coastlines and rising seas where necessary.

De facto permanent disposal would likely result at the CISF sites, which are not designed for long-term waste isolation. Disasters could result, including potential water contamination. Creating CISF's will waste money and delay progress toward less risky permanent options.

Area 2: Removing Barriers to Meaningful Participation

1) What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

Exclusion has been an absolutely huge barrier. Please remove barriers by halting the push for siting CISF's. Work towards better, less-risky options that could be utilized instead.

2) What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

This is an inappropriate question. Surely DOE can't be asking what resources (how much money) it will take to convince communities to accept storage of the nation's deadliest waste in their backyards, for decades and perhaps centuries – or forever. How sincere is DOE in asking this question? The agency did its best to not hear from people in Texas and New Mexico in the 2015-2017 process, or since then, even though these states targeted for CIS facilities.

3) How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

A similar question was asked in 2016, but to no avail. This question is after the fact now.

4) How might the Department more effectively engage with local, State and Tribal governments on consent-based siting of federal interim storage facilities?

Those who would be most impacted should be treated as stakeholders, not ignored. Inappropriate incentives and disinformation must be eliminated.

5) What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Communities will need independent experts in order to their own research. They will want to ensure that they get scientifically valid information.

Area 3: Interim Storage as Part of a Waste Management System

1) How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

The CISF proposals for Texas and New Mexico would concentrate the nation's most deadly waste in a region with high Indigenous and LatinX populations. **Current CISF proposals represent the epitome of environmental injustice.**

DOE could help stop injustice now by publicly acknowledging that there is no consent for the Texas and New Mexico sites. DOE consent-based policy should rule out siting CISF or other nuclear facilities in regions with high Indigenous populations or high percentages of people of color. High-level radioactive waste could end up being transported along the rail line from El Paso to Monahans, Texas. EPA's Environmental Justice screens show that along this line, the Latinx population represents 92% of the overall population, and 49% of the population does not speak English well.



2) What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure or clean energy technologies?

Development of a “nuclear corridor” in Texas and New Mexico must end. New Mexico already hosts the Waste Isolation Pilot Project (WIPP) and the National Enrichment Facility near Eunice, just across the state line from

Waste Control Specialists' "low-level" radioactive waste site in Texas. Nuclear weapons are assembled and disassembled at Pantex, near Amarillo.

These two states have already had their share of nuclear facilities.

It would be tempting fate and asking for disaster to co-locate thousands of tons of spent nuclear fuel and Greater-Than-Class C waste next to facilities at the existing Waste Control Specialists (WCS) site..

Operation began in 2012 at WCS' [Compact Waste Facility](#), a pit for disposal of commercial low-level radioactive waste, let alone for the overall facility. WCS also has a [Federal Waste Disposal Facility](#) for up to 26 million cubic feet of low-level radioactive waste and a [Byproduct Facility](#) that contains weapons waste from Fernald, Ohio. Problems such as leaks or contamination at one facility could render the entire site inoperable. No contingency plan has yet been approved for the Compact Facility, much less the overall site.

The International Atomic Energy Agency (IAEA) states that [cumulative radionuclide inventory \(pg 46\)](#) limits should be set at a radioactive waste site. There are TCEQ limits for individual facilities, but none for the site as a whole, with or without spent nuclear fuel.

A RCRA [hazardous waste facility](#) is adjacent to low-level radioactive waste facilities at WCS. The [IAEA \(pg 27 of 67\)](#) says that radioactive waste storage locations "should be remote from other hazardous storage areas (e.g. stores for explosive and flammable materials) and should not be liable to flooding." What if hazardous materials corrode radioactive waste containers or react to cause explosions?

Barrels of Transuranic (TRU) waste from Los Alamos were originally destined for the Waste Isolation Pilot Project (WIPP) site in New Mexico. The WIPP site site had a fire on Feb. 9, 2014 followed by a Feb. 14, 2014 explosion of a TRU barrel and [radiological release](#). A lengthy remediation process cost over \$2 billion. Some potentially exploding barrels from Los Alamos are now stored at the WCS site, adding to cumulative impact risks, especially if high-level radioactive waste is stored at the site.

There is drought in the Southwest right now, but intense thunderstorms do occur and can be accompanied by intense flooding and severe winds. An [86-car-train](#) was swept off the tracks in West Texas due to 80 mph straight line winds.

Many rural West Texas counties have only volunteer fire departments and emergency responders, which could complicate disaster scenarios. Cumulative impacts could lead to unforeseen, unprecedented disasters, which must be prevented.

No reprocessing should be considered in conjunction with CISFs. Reprocessing has been discussed by some nuclear advocates, perhaps because they see opportunity with concentrations of nuclear waste materials. This co-location should never happen.

Reprocessing was halted in the U.S. due to massive contamination and security risks. Remediation at a former [West Valley, N.Y.](#) reprocessing facility began in 1980 and is [still underway](#) today. Clean up has already cost over \$2.9 billion.

3) To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

Interim storage is step that should be eliminated entirely. Funding and research should instead focus on better storage systems and permanent disposal options. The goal should be to isolate high-level radioactive waste and reactor-related Greater-Than-Class-C waste from living things for a million years, as was required for Yucca Mountain.

4: What other issues should the Department consider in developing a waste management system?

The proposed Texas and New Mexico CISF projects should be taken off the table. They should have been eliminated already. High-level radioactive waste doesn't belong at these sites, which are prone to earthquakes, sinkholes, tornadoes, intense winds, flooding, and wildfires.

The Permian Basin is the largest U.S. oil-producing region. What would happen if these oilfields became contaminated? Earthquakes are increasing in frequency and magnitude. Andrews County was the epicenter of a large 1992 earthquake. Radioactive waste should not be stored in a seismically active region.

A CISF at the Texas site would risk contamination of the nearby Ogallala, the nation's largest aquifer, which provides precious water to eight states in the "breadbasket" of our nation.

The presence of groundwater at the WCS site is also of concern. Professional staff at the Radioactive Materials Division of Texas Commission on Environmental Quality (TCEQ) unanimously [recommended denial](#) of WCS' low-level radioactive license due to concerns about the presence of water, but the agency licensed the facility despite staff objections.

CISFs are not a good idea anywhere, and would delay progress toward less-risky approaches to isolating dangerous nuclear waste. [Hardened On-Site Storage](#) should be fully researched and implemented instead of CISF. Research should also be geared toward improved systems and permanent disposal options such as [deep geologic disposal](#).

Final Statements

State legislators, Congressional Representatives, U.S. Senators, Governors and County Judges should be asked whether or not they consent to consolidated interim storage.

DOE should develop consent-based siting policies that give tribal, state and local governments the ability to consent to or reject CISF siting. Counties along high-level radioactive waste transport routes should also be able to deny consent due to risks of leaks, accidents or sabotage.

If these entities do not consent, a CISF license should not be issued. If a CISF has been licensed, that license should be rescinded if there is no explicit consent from tribal, state, and local governments, as well as counties on transport routes.

Beyond Nuclear and a broad coalition of organizations will be submitting comments collectively. We agree with and hereby incorporate this comment that was part of that submission:

"Tribal, state, and local governments should have free, and fully-informed, consent-based siting rights, including an absolute veto against a federal CISF. That is, tribal, state, and local governments should have fully-informed, absolute, binding, and final rights to non-consent.

Any DOE, or private, scheme to construct and operate a CISF must cease and desist immediately, once tribal, state, and/or local government “hosts” express their non-consent. In addition, consent-based siting rights should extend directly to the citizens/residents of the tribal reservation, state, and/or locality. Free, and fully-informed, consent-based siting rights should extend to citizens/residents, who should also have absolute and final veto rights to block CISFs.”

Sincerely,

Karen Hadden, Executive Director

Sustainable Energy and Economic Development (SEED) Coalition

Former Texas State Representative Lon Burnam

Tarrant County Coalition for Environmental Awareness

Cyrus Reed, Conservation Director

Lone Star Chapter of the Sierra Club

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From: Richard/Beki HALPIN
Sent: Thursday, February 24, 2022 9:31 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: Area 1.docx

From: Beki Halpin

Proud citizen of Texas



Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

The Department should completely halt all attempts to ask, force, bribe, coerce, cajole, incentivize, or in any other way seek to site Federal interim storage facilities in environmental justice communities, such as the communities in Andrews County, TX and across state lines in New Mexico at the Holtec facility. You can build considerations of social equity and environmental justice by asking **wealthy** communities to have this waste sited in the middle of their community. The Andrews County community and the New Mexico Community are largely Latinex, Hispanic and Endigenous peoples' communities. They are low income communities. They should not under any circumstances be under consideration for siting of this material. This is a glaring example of the Department failing to walk its talk.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

The community as a whole which includes the state the community is in, including the cities the material will be transported through, the county the facility is targeting, the local citizenry, the local tribe and its members should all give consent. A small group of city or county officials or tribal council members must not speak for the entire state the facility has targeted for exploitation. Consent must be given by a majority of elected state, county, city, and tribal representatives including where the material will be dumped and the cities and counties it will pass through in transit.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

No benefits or opportunities should be offered. No perceived benefits or opportunities could possibly outweigh the losses the community will suffer when one of these "interim storage facilities" corrupts and burns or is attacked by terrorists or suffers catastrophic weather related failure and radiation contaminates their community and makes it unlivable.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

The barrier and impediment to successful siting of these storage facilities is the truth. The truth is that the site will not be interim. Once the waste is there, it will never leave. The containers are not made for permanent storage and they will deteriorate and leak. There is no way to repackage the waste at these facilities, so the deterioration will accelerate. The storage containers are insufficient to withstand the heat they will be subjected to. The containers are not made to withstand earthquakes that are more and more frequent in these desert communities. The containers are not made to withstand flash flooding that occurs. So the facility will fail and become a radioactive cancer that will consume any community nearby. I think this truth is a barrier to siting one of these trojan horses.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

The department should tell everyone including any community they are targeting for siting the truth. Once the site opens and waste is accepted, the waste will never leave. There is no real plan for it to go anywhere else. There has never been a successful plan for permanent storage of the high level radioactive waste. Once a community takes it at a facility, it's theirs. And it is like a giant ponzi scheme to keep the facility funded. The storage facility has to keep receiving more and more radioactive materials to pay its bills. When the facility can no longer take waste material, or when it becomes too contaminated to operate, the owners will walk away. They have no obligation to stay. And the community will be left with a contaminated facility that brings no benefits and only danger and sorrow. That should be community's expectation.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

There should be a statewide vote to allow the siting of a waste facility in any state. That would be the community you should work with, the citizens of the state targeted.

7. What other issues, including those raised in the *Draft Consent-Based Siting Process* ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

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1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

Barriers to meaningful participation have been on full display in previous siting process meetings. It is a barrier to meaningful participation in a consent-based process to completely fail to ask consent of the people who would have the site in their state for their consent. In 2016 a series of meetings was held to build false consent for siting in Texas and none of the public comment meetings were held anywhere in Texas. I would say that pretty much prevented meaningful participation of those who would be most affected by the siting in Andrews County. Then consent from Andrews County was declared based on the decision of 3 or 4 Andrews City Council members at a meeting that was not effectively posted or perhaps was not even public. The elected representatives of Andrews no longer support or give consent to siting an interim storage facility in Andrews County. Texas does not give consent. The Texas Governor does not consent. Texas cities and counties have stated that they do not consent. Ranchers and oil companies near the Andrews facility do not consent. Individuals along transportation corridors do not consent. But you move on with your plans to site an interim storage facility in Andrews County as though we have not participated, by commenting and sending letters.

Your willful determination not to hear us is a barrier to meaningful participation on our parts. You can mitigate and remove this barrier by stopping your gamesmanship. Do not act like you want to hear when you, in fact, do not. Understand that consent means consent.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

2. Bring in experts from Beyond Nuclear and Nuclear Information Resource Service and other NGO's that specialize in nuclear issues. Do not limit information sources to pro-industry nuclear experts. Information should be shared between all communities targeted for potential siting for a waste facility.
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Don't even think of siting waste facilities in environmental justice communities. Just don't do it. Put these facilities in wealthy communities. There would then be no need to dance around about "considerations" of social equity and environmental justice. Putting these facilities in low income, minority and tribal communities will never be just or equitable no matter how many "considerations" you bandy about.

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

Considering drawbacks, it would be quite a drawback if there is an attack on a facility that houses multiple highly radioactive waste streams all in one place. What could possibly go wrong? Or perhaps if there is a severe weather event with catastrophic consequences and the co-located wastes corrupt and begin to burn, imperiling the whole facility, that would be a drawback. The more chaos of industry, manufacturing, research, and development that happens around and among the aging waste, the more opportunity for loss of control and safe containment. But such a scenario would make an exciting novel whose title might be Fool's Paradise. Regarding benefits, it would be a benefit to our enemies who might want to do us harm by having so much available toxic, poisonous and radioactive waste available to them in one place where terrorist attacks would be easy to plan and execute.

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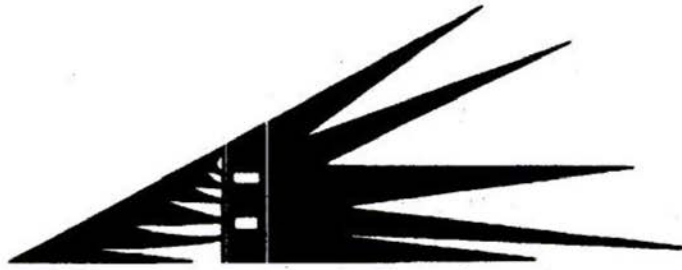
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From: Don Hancock
Sent: Friday, March 4, 2022 1:07 PM
To: Consent Based Siting
CC: Nahigian, Joceline; Borak, David
Subject: [EXTERNAL] Comments on RFI - December 1, 2021
Attachments: SRIC comments 030422.pdf

Please consider and respond to the attached comments from Southwest Research and Information Center and all others that you receive.

Thank you.

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SOUTHWEST RESEARCH AND INFORMATION CENTER

P.O. Box 4524 Albuquerque, NM 87196 505-262-1862 FAX: 505-262-1864 www.sric.org

March 4, 2022

Office of Spent Fuel and Waste Disposition
Office of Nuclear Energy
U.S. Department of Energy (DOE)
Washington, DC 20585

Via email: consentbasedsiting@hq.doe.gov

RE: Request for Information (RFI) 86 *Federal Register* 68244-246 (December 1, 2021)

Dear People:

Southwest Research and Information Center (SRIC) provides these comments on the RFI on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities. SRIC has a 40-year history of involvement in the DOE nuclear waste programs under the Nuclear Waste Policy Act (NWPA) and an even longer history regarding the Waste Isolation Pilot Plant (WIPP). In its previous consent-based siting process in 2015-2017, DOE recognized that experience by issuing a speaking invitation to the May 24, 2016 Public Meeting in Denver, CO¹ and to be an expert participant in the May 31-June 1, 2016 Consent-Based Siting Project Design Workshop in Boston, MA.² On January 27, 2017, SRIC also submitted written comments on the RFI on Private Initiatives to Develop Consolidated Interim Storage Facilities.³

SRIC was one of more than 50 organizations signing the February 15, 2022 letter from Diane Curran regarding this present RFI.⁴ SRIC submits these additional comments, while strongly objecting to the deadline to submit the comments now, because the RFI should be withdrawn.

1. DOE should not proceed with the proposed consent-based siting process for “interim storage facilities”.

The RFI states: “Responses to the RFI will inform development of a consent-based siting process, overall strategy for an integrated waste management system, and possibly a funding opportunity.” 86 *Federal Register* 68244. DOE should not conduct any process for “interim storage facilities.” If the department takes action, it should be a rulemaking process to develop a consent-based repository siting process, amending its existing repository guidelines – 10 CFR 960 – which do not include consent-based siting or environmental justice criteria.

¹ http://sric.org/nuclear/docs/20160524_Denver_Hancock_Transcript.pdf

² <http://sric.org/nuclear/docs/DH060116final.pdf>

³ http://sric.org/nuclear/docs/012717_SRIC_comments.pdf

⁴ http://sric.org/nuclear/docs/20220215_NGO-ltr-to-DOE-re-Request-for-Information-2.pdf

As SRIC has stated in its previous comments on DOE's consent-based process (as have many other organizations), DOE is to develop geologic repositories, and is not allowed by the NWPA to support "interim storage facilities." The law states:

The generators and owners of high-level radioactive waste and spent nuclear fuel have the primary responsibility to provide for, and the responsibility to pay the costs of, the interim storage of such waste and spent fuel until such waste and spent fuel is accepted by the Secretary of Energy in accordance with the provisions of this Act [42 U.S.C. 10101 et seq.] 42 U.S.C. § 10131(a)(5).

That law further states: DOE shall "take title" to spent fuel only "following commencement of operation of a repository." 42 U.S.C. § 10222(a)(5)(A).

See also Final Interpretation of Nuclear Waste Acceptance Issues, 60 Fed. Reg. 21793, 21795 (May 3, 1995) (concluding that "the mandate to dispose and the duty to take title must be read together.")

Thus, the NWPA gives DOE responsibility for developing and operating geologic repositories, but does not allow the Department to take title to commercial spent nuclear fuel until a repository is operating. There is no possibility of an operating spent fuel repository for at least several decades, so there is no reason or legal authority for DOE now to pursue "interim storage."

However, the RFI misleadingly states: "In the Consolidated Appropriations Act, 2021, Congress appropriated funds to the Department for interim storage activities." 86 *Federal Register* 68245. That language could mislead some members of the public to think that Congress amended the NWPA in the 2021 law. Congress did no such thing.

The actual language of PL 116-260 is:

For Department of Energy expenses necessary for nuclear waste disposal activities to carry out the purposes of the Nuclear Waste Policy Act of 1982, Public Law 97-425, as amended, including interim storage activities, \$27,500,000, to remain available until expended, of which \$7,500,000 shall be derived from the Nuclear Waste Fund. 134 STAT. 1366.

Thus, Congress expressly did not amend the NWPA, as all of the appropriated funds are for the "purposes of the NWPA," including the \$20 million not from the Nuclear Waste Fund. The RFI is misleading by not so stating.

The RFI further states:

This [interim storage] will allow for removal of spent nuclear fuel from reactor sites, provide useful research opportunities, and build trust and confidence with stakeholders and the public by demonstrating a consent-based approach to siting. 86 *Federal Register* 68245.

Such language is at best aspirational, but SRIC believes it is inaccurate and misleading. Interim storage at reactor sites has been occurring for decades since the first commercial reactor refueled to have on-site spent fuel storage and will continue as long as any nuclear plant is operating and for years thereafter. The purpose of such interim storage is to allow the spent fuel to cool and radioactive decay to safely occur. It is not for “research,” though SRIC does not object to DOE conducting research on such on-site storage, including in dry casks, for fuel degradation, integrity of storage containers, and other similar activities. That such interim storage has built trust and confidence is aspirational and has not been demonstrated, as at numerous locations, some utility executives, government officials, and members of the public have questioned the long-term safety of such storage. Further, such storage has not been accomplished through a true free, prior, and informed consent process.

Interim storage could be done by utilities, as proposed by Private Fuel Storage and licensed by the Nuclear Regulatory Commission in 2006. But it is premature to research such consolidated storage, since there is no operating site.

Further, the NWPA currently does not require “consent-based siting.” SRIC again believes that the RFI is misleading by not so stating.

2. DOE should propose revisions to its 10 CFR 960 Siting Guidelines for Nuclear Waste Repository to include a consent-based siting process.

Insofar as DOE believes that future repository siting should include “consent-based siting,” it should so demonstrate by initiating a rulemaking to revise its General Guidelines for the Preliminary Screening of Potential Sites for a Nuclear Waste Repository – 10 CFR 960. Those guidelines are required by Section 112(a) of the NWPA. The law expressly allows the guidelines to be revised. 42 U.S.C. 10132.

Such a rulemaking could provide a robust public process, subject to judicial review, to engage stakeholders in detailed discussion and analysis of “consent-based siting,” which could be far superior to the flawed process that DOE used in 2015-2017 and started with the current RFI.

SRIC specifically notes that those guidelines do not currently include “consent-based siting,” nor do they include environmental justice criteria. If DOE is serious about involving people, communities, and groups that have historically not been well-represented in nuclear waste discussions, as stated in the RFI, it should provide funding for such groups, including for hiring independent consultants, to participate in the rulemaking.

3. DOE-NNSA and EM should propose consent-based siting and technical standards for Defense TRU Waste Repositories.

DOE also is responsible for defense transuranic (TRU) waste repositories, of which WIPP currently is the only one, having first received waste on March 26, 1999. Since WIPP was first authorized in PL 96-164, Section 213, it has been clear that other repositories are necessary. The WIPP Law Withdrawal Act of 1992 (PL 102-579) specifically limited the amount of defense

TRU waste to 6.2 million cubic feet. Sec. 7(a). At that time, that was the amount of waste for which WIPP was designed and had already been generated.⁵

During the House floor debate, Rep. Peter Kostmayer, one of the bill's sponsors, stated:

Whether we are going to generate more nuclear waste is not the question. The question is we have got to get rid of the material we have. This facility will take only 20 percent of all the waste that we have. Still 80 percent will remain unburied. We have to deal with that. *Congressional Record* October 5, 1992 at 32552 (c. 2).

DOE's WIPP Record of Decision (ROD) of June 22, 1990 stated:

The WIPP is designed to dispose of 6.2 million cubic feet (ft³) of contact-handled (CH) TRU waste and 250,000 ft³ of remote-handled (RH) TRU waste in the mined repository over a 25-year operational life. 55 Federal Register 25690.

It is well past time for DOE to initiate a process to site another defense TRU waste repository. If DOE is serious about a free, prior, informed consent process, it should so demonstrate in siting of the next TRU repository.

To start that process, DOE should develop initiate a public process to develop technical standards and a consent-based siting process for such a repository.

4. SRIC's specific comment on the RFI's 16 questions.

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

SRIC Response: DOE should not conduct any process for "interim storage facilities." A free, prior, informed consent process should exclude communities that have been targeted for toxic waste sites and Native American land as an environmental justice criterion.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

SRIC Response: DOE should not conduct any process for "interim storage facilities." A free, prior, informed consent process should exclude Native American land as an environmental justice criterion.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

SRIC Response: DOE should not conduct any process for "interim storage facilities." A free, prior, informed consent process should exclude communities that have been targeted for toxic waste sites and for Native American land as an environmental justice criterion.

⁵ Final Environmental Impact Statement Waste Isolation Pilot Plant, DOE/EIS-0026, October 1980, Vol. 1 at 2-17.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

SRIC Response: DOE should not conduct any process for “interim storage facilities.” A free, prior, informed consent process should exclude communities that have been targeted for toxic waste sites and Native American land as an environmental justice criterion. DOE’s history of not seeking consent for its facilities and long-standing concerns of states and tribes about such sites is a severe impediment to anyone trusting DOE to fully implement a robust free, prior, informed consent process.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

SRIC Response: DOE should not conduct any process for “interim storage facilities.” No community can reasonably expect that any duration other than forever would apply to any “interim” storage facility until and unless there is such an operating repository that is designed, licensed, and has binding agreements to accept all of the waste at an “interim” facility.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

SRIC Response: DOE should not conduct any process for “interim storage facilities.” For a geologic repository, Congress must enact legislation – or there should be a constitutional amendment – that requires a free, prior, informed consent process, and provides for non-consent, that includes community, state, and tribal entities receiving funding to hire their own independent expert consultants and to develop their own mechanisms to establish consent and non-consent. In addition, federal environmental laws must be amended to allow state regulation and citizen-suit provisions for any site.

7. What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

SRIC Response: DOE should not conduct any process for “interim storage facilities.” DOE should publish a detailed response to all comments received on the 2017 process and accept comments as to the accuracy of its responses. That lack of response to public comments is the antithesis of what a consent-based process requires.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

SRIC Response: DOE should not conduct any process for “interim storage facilities.” The Department’s historic practices of not allowing consent, opposing state regulation of radionuclides, and breaking the Consultation & Cooperation Agreement with the State of New Mexico regarding WIPP, means that it has no credibility. Thus, the Blue Ribbon Commission on America’s Nuclear Future stated that a new agency, not DOE, should carry out a consent-based siting process.⁶ A free, prior, informed consent process should exclude communities that have

⁶ Blue Ribbon Commission on America’s Nuclear Future - Report to the Secretary of Energy, January 2012, Executive Summary at x; Chapter 7.

been targeted for toxic waste sites and Native American land as an environmental justice criterion.

Additionally, DOE has no history of communicating well with Spanish-speaking people, which is a significant part of the U.S. population. While the RFI is posted on the DOE consent-siting webpage in nine languages, which is a welcome practice, other related materials are not posted in languages other than English. While the RFI states that people can visit the webpage “for assistance in languages other than English,” there is no indication that written comments are welcome in other languages. This lack of language competency by DOE is a serious barrier to providing for meaningful public participation.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

SRIC Response: DOE should not conduct any process for “interim storage facilities.” A free, prior, informed consent process requires financial resources so that local communities, states, and tribes can hire independent expert consultants. In addition, federal environmental laws must be amended so that states and tribes have regulatory authority over any waste facilities.

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

SRIC Response: DOE should not conduct any process for “interim storage facilities.” A free, prior, informed consent process requires financial resources so that local communities, states, and tribes can hire independent expert consultants, including obtaining information from, and collaborating with, other communities, states, and tribes.

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

SRIC Response: DOE should not conduct any process for “interim storage facilities.” For DOE defense TRU repositories, a free, prior, informed consent process requires financial resources so that local communities, states, and tribes can hire independent expert consultants, including obtaining information from, and collaborating with, other communities, states, and tribes. In addition, Congress must enact laws so that states and tribes have regulatory authority over waste facilities. Congress must also provide authority for consent-based siting (or pass a constitutional amendment to be sent to states for ratification for such purpose).

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

SRIC Response: DOE should not conduct any process for “interim storage facilities.” For DOE defense TRU repositories, a free, prior, informed consent process requires truthful information from DOE regarding all aspects of the facility, including types and amounts of waste, for what duration, with what regulatory requirements. Congress must support such a process with adequate financial resources so that local communities, states, and tribes can hire independent expert consultants, including obtaining information from, and collaborating with, other communities, states, and tribes. In addition, Congress must change the laws so that states and tribes have regulatory authority over waste facilities.

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

SRIC Response: DOE should not conduct any process for "interim storage facilities." A free, prior, informed consent process should exclude communities that have been targeted for toxic waste sites and Native American land as an environmental justice criterion. DOE's history of not seeking consent for its facilities and long-standing concerns of states and tribes about such sites is a severe impediment to anyone trusting and engaging with DOE.

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

SRIC Response: DOE should not conduct any process for "interim storage facilities." Before considering co-locating a repository at an existing DOE site, DOE should focus its efforts on consent-based siting of technically sound, publicly accepted geologic repositories, including additional defense TRU repositories. An initial step is for Congress to amend federal environmental laws to provide state and tribal regulatory authority regarding spent nuclear fuel and other radioactive waste.

Insofar as the question encourages a co-located storage/reprocessing facility, that is totally unacceptable and should not be considered. Reprocessing is a dangerous, environmentally damaging, proliferation, and enormously costly process that should not be done again in this country. Reprocessing for nuclear weapons at Hanford and Savannah River Site is the source of hundreds of billions of dollars of DOE cleanup costs at those sites, in addition to the worker public health problems, soil and water contamination problems. Commercial reprocessing at West Valley, NY was an environmental and economic disaster that remains a burden on New York and the nation.

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

SRIC Response: DOE should not conduct any process for "interim storage facilities." Any "interim" facility will result in delay or deferral of a repository, which was the reason that the NWSA required an operating repository for DOE to take title to the waste. 42 U.S.C. § 10222(a)(5)(A).

4. What other issues should the Department consider in developing a waste management system?

SRIC Response: DOE should not conduct any process for "interim storage facilities." DOE should focus its efforts on consent-based siting of technically sound, publicly accepted geologic repositories, including additional defense TRU repositories. Two essential first steps are (1) initiating a rulemaking to revise its General Guidelines for the Preliminary Screening of Potential Sites for a Nuclear Waste Repository – 10 CFR 960. Those guidelines are required by Section 112(a) of the NWSA. The law expressly allows the guidelines to be revised. 42 U.S.C. 10132, and (2) developing technical standards and a consent-based siting process for defense TRU waste repositories. DOE should also inform Congress that adequate funding must be provided for states, tribes, and local communities to participate in the siting process additional defense TRU repositories.

Thank you very much for your careful consideration of, and your response to, these comments and to all of the other comments that are submitted.

Sincerely,

A handwritten signature in black ink, appearing to read "Don Hancock". The signature is fluid and cursive, with the first name "Don" and last name "Hancock" clearly distinguishable.

Don Hancock

cc: Senators Martin Heinrich and Ben Ray Lujan, Representatives Melanie Stansbury, Teresa Leger Fernandez, and Yvette Harrell
William "Ike" White/DOE-EM

From: Layne Piper
Sent: Friday, March 4, 2022 12:31 PM
To: Consent Based Siting
CC: Carolyn Hanson; Greg Lovato
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: 2022 ECOS Consent Based Siting Comment Letter.pdf

Please see attached for the Environmental Council of the States response to the RFI. --

Layne Piper
Senior Project Manager
Environmental Council of the States


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March 4, 2022

Via email to: consentbasedsiting@hq.doe.gov

Re: RFI: Consent-Based Siting and Federal Interim Storage

On behalf of the Environmental Council of the States (ECOS), I am pleased to submit this comment letter to the U.S. Department of Energy (DOE) in response to the *Request for Information (RFI) on Consent-Based Siting and Federal Interim Storage*. For more information or for questions about the following comments, you may contact Carolyn Hanson at [REDACTED] (address and phone above). Please see below for ECOS answers to the questions posed in the RFI.

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

DOE can build these considerations into the process by:

- Ensuring early and meaningful opportunities for input from communities and states;
- Planning for the effects of a site for future generations, and consider the impacts of related social and environmental concerns; and
- Sharing definitions for the terms “social equity” and “environmental justice,” and working with states and potential host communities to clarify how those considerations will be evaluated.

DOE should also consider the need to address legacy defense waste as an environmental justice concern, and understanding that meeting this need affects the trust of potential host sites and state partners.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

- There should be robust acknowledgment of, and deference to, state regulatory authority where present in the determination of consent for siting a federal interim storage facility.
- DOE should seek input from other nearby communities and states but may want to give greater weight to input from those closer to the site than those farther from it.
- Where applicable, Tribes should be treated as sovereign governments and be given the appropriate government to government consultation as part of the process.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

Providing grants to local, state, and tribal governments to actively engage and advise the department could encourage meaningful participation. Regular communication with states to share updates throughout the process would also be helpful.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

All interest groups, tribal groups, and state regulatory groups should be involved in significant ways that offer them a place at the table for the good management of the waste. ECOS recommends DOE review the comments of the Energy Communities' Alliance (ECA) for additional suggestions on local engagement.

7. What other issues, including those raised in the Draft Consent-Based Siting Process, should the Department consider in implementing a consent-based siting process?

- What is the definition of consent, and how is it measured?
- Who within a state should sign a consent-based siting agreement?
- Who within the federal government will sign a consent-based siting agreement?
- What is the period of time in which decisions will be made about siting?
- What is the timeline for opting out? At what point will a potential host state or community be unable to back out of an agreement?
- What are the benefits to a state that agrees to host a facility?
- How does DOE keep long-term consent? What will DOE do to ensure long-term consent by the selected site(s)?
- Could the process be enhanced with public-private partnerships?

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

One barrier to meaningful participation is when participants do not trust that their input will truly be heard and given consideration, as in having the potential to affect the outcome. Engagement would increase if DOE can assure participants that time spent from the tribes, states, and local governments engaging in consent-based siting would affect change in the decision-making process.

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

Ensuring opportunities for substantive involvement of state, local, and tribal governments by creating adequate time and space for information sharing, and for questions and concerns to be addressed is important. If planning to rely on virtual meetings, DOE should also consider the impact of this remote engagement and how that might affect access in some communities.

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Information that communities, governments, or other stakeholders need are answers to the following:

- What are the environmental impacts to the site?
- What are the regulatory requirements?
- How are National Environmental Policy Act requirements taken into consideration?
- What is the broader risk to the community including risks associated with transportation of spent fuel and construction activities, and the environmental risks from significant events like fires, floods, tsunamis, or earthquakes?
- If there was a worst case scenario that impacted the local community, how would the department compensate the people and community?
- Who weighs in on the decision?
- How many interim storage sites are being evaluated?
- What is the future land use?
- How will input be considered in the Department's decision-making?

Area 3: Interim Storage as Part of a Waste Management System

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

The push for progress on a permanent repository should not be diminished with the identification of an interim storage facility since it is only a short-term solution. One of the most important considerations in developing an interim facility is being able to plan for the waste being moved to a permanent repository. This includes considerations like ensuring that waste or fuel is packaged for shipment and storage appropriately.

We appreciate the opportunity to offer these comments. This letter, though submitted on behalf of states, does not take the place of any individual state comments that may be submitted.

ECOS is supportive of DOE moving forward to develop a consent-based siting process, and requests that DOE continues frequent communication with states as it develops and implements an effective process for this complex issue.

Sincerely,



Carolyn Hanson
Acting Director, ECOS

cc: Greg Lovato, ECOS Federal Facilities Forum Chair

From: Mark Hinaman
Sent: Wednesday, March 2, 2022 6:16 PM
To: Consent Based Siting
Subject: [EXTERNAL] Response to DOE's RFI on Consent Based Siting
Attachments: Responses to DOE's Request for Information on Consent-Based Siting – Fire2Fission.pdf

Hi All,

See attached my responses to the DOE's Request for Information on Consent Based Siting. These can also be found [here](#).

Best,

Mark Hinaman

"If it takes 10 years to build a nuclear reactor, then we'd better start now." -Brandon Bourn

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[< https://fire2fission.com/>](https://fire2fission.com/)

Responses to DOE's Request for Information on Consent-Based Siting



The Department of Energy has a Request for Information out for the public to submit responses to a list of questions. I cover it in depth in a [previous post < https://wordpress.com/post/fire2fission.com/334>](https://wordpress.com/post/fire2fission.com/334), and I present my responses to their questions in this post.

I. Consent-Based Siting Process

1. *How should the Department build considerations of social equity and environmental justice into a consent-based siting process?*
 1. The Department should recognize, first and foremost, the opportunity cost present in the energy industry. The volume of spent nuclear fuel and its impact on the environment relative to other forms of waste from other energy generation technologies is miniscule. The risk of harming the public at a federal facility or existing nuclear facility is dwarfed when compared to the real harm and danger being imposed on the public now by other energy generation techniques. An estimated 13,000 people die in the United States every year because of air pollution caused by emissions from fossil burned energy sources. These deaths could be alleviated if we used a cleaner technology for generating electricity and transportation. Nuclear stands a realistic chance to replace those

technologies and displace the continued harm caused by their waste streams. A large hurdle and black mark on the industry inhibiting development and increasing assumed risk is the lack of a permanent disposal facility for the waste products. It is intrinsically unfair to the nuclear industry to be forced to dispose of and manage their waste permanently when all other forms of generation are not held to an equivalently stringent standard, but the precedent exists nonetheless and is unlikely to dissipate. As such, in the interest of protecting the well being of the public and minimizing humanity's impact on the environment, the Department should seriously consider expediting this process to complete it as quickly as possible. If not, then the environment will continue to be polluted by the technologies we're currently exploiting and people will continue to die.

2. Under the Department's current plan, based on the **2017 Draft Report <<https://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf>>**, the Process is planned to require 20 to 37 years to have an interim or permanent facility in place. This is unacceptably slow and wildly detrimental to the public's health. The Department should have a plan to build and commission a facility in as few as two years.

2. *What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?*

1. Tribal, State, and local governments should exist as partners with the Federal government to generate buy-in, should be beneficiaries of the overall process, but shouldn't be allowed to stonewall a decision which will help the entire world. They should be empowered to decide the fate of their home, but shouldn't prohibit the decision of a neighboring community.

3. *What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?*

1. Money is always a motivator. Create jobs, guarantee long term opportunities (i.e. don't waffle on the decision making and not build the facility), and ensure price stability. Additionally, present the option for growth. Plant the seed in the minds of the community that they could be the host for all of the spent nuclear fuel from around the country and around the world.

4. *What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?*

1. Three primary barriers exist: the time it takes to implement and deploy, the potential for lack of public support, and a resulting imbalance in power between communities who want to be hosts and larger communities.

2. The Department's current plan estimates 20 to 37 years to build a facility. This is radically unacceptable. Large projects take time, but if a project stands to span several decades, then it's unlikely to be accepted by the host community. An entire generation may come and go, political regimes will change, and it will be impossible to attract private capital, investment, or buy-in from local communities. This must be shortened.
3. The repeated myth around nuclear energy – and the spent nuclear fuel in particular – is it's widely unpopular among the public. In my circles, I find this to simply not be true. Many people are ignorant about most attributes of the nuclear industry, but the public at large – and millennials in particular – is not afraid of it. They're just ignorant and don't understand it. A large marketing and educational campaign about spent nuclear fuel would be helpful in expediting public acceptance of the issue and the subsequent approval of a facility.
4. A common challenge in American politics and our government system is the mismatch in geography and political alignment among certain communities. Three examples come to mind. Yucca Mountain was a popular project among the host community who was excited about the jobs and opportunities it would bring, but it was extremely unpopular among the people in urban centers in the state of Nevada. It became so unpopular that the federal government could never commission it. The same thing is happening now in New Mexico where the people in urban centers (Santa Fe, Albuquerque, etc.) are voting to ban the establishment and operation of a nuclear waste facility. I spend a significant amount of time in the oilfields in southeast New Mexico, and I can say with confidence that a nuclear waste facility would be welcomed and largely unnoticed by the local population. The exact same scenario occurs in Colorado. I grew up on the western slope of Colorado, and the politics and public acceptance of which kind of operations occur are polar opposites. People working and living in the rural communities often feel tyrannized and controlled by the agendas, beliefs, and desires of the larger populations in urban centers. It's feasible to imagine a spent fuel waste facility being accepted in rural Colorado, but the state banning the construction of it because of the agenda and ignorance of the larger population in Denver. The Department should consider seriously how to circumvent this potential outcome and make it possible for small, rural communities to participate in the process without the buy-in from their parent states.
5. *How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?*

1. Disseminate the information in a format that's consumable and easy for the public to accept. Utilize the media platforms which people consume content through. In addition to the traditional methods of communication (i.e. host webinars for Q&A sessions, townhall meetings, and post content on websites), consider starting an Instagram or TikTok page, an educational YouTube channel, and recording Q&A podcasts for communities to consume on their own time.
6. *What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?*
 1. Energy Impact Center
 2. Center for Industrial Progress
 3. Switch Energy Alliance
 4. Environmental Progress
 5. Generation Atomic
 6. Organizations & landfills who accept toxic waste
 7. Technical experts on nuclear waste
7. *What other issues, including those raised in the **Draft Consent-Based Siting Process** <
<https://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf>>, should the Department consider in implementing a consent-based siting process?*
 1. Consider approaching communities in western Colorado first.
 2. Consider sequestering the waste similar/identically to how the oil and gas industry sequesters sand during the hydraulic fracturing process.

II. Removing Barriers to Meaningful Participation

1. *What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?*
 1. The spread of misinformation around spent nuclear fuel has been rampant and generated a fundamental misunderstanding among the public about it's relative danger compared to almost anything else the public is likely to encounter in their lives. Because of this reality, an educational campaign in a format that's consumable by communities e.g. through social media is likely the best method for educating populations. Doing so accomplishes several things:
 1. Educates: such a campaign will inform the public on the process and potential of a consent-based siting process.
 2. Respectful of time: with access to all of the information all around the world, humans are extremely strapped on time. Education through a social media campaign meets them on their terms and minimizes the

amount of time spent on informing them of the process.

3. Broad Audience: A social media campaign also stands a better chance at reaching a broader audience than pamphlet distribution, mailings, town halls, or other forms of information dissemination.
2. *What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?*
 1. There is sufficient information on the internet for most intelligent humans to educate themselves about this topic; however, it's likely not packaged succinctly or sufficiently enough. I recommend the following:
 1. Five minute informational video on YouTube explaining the process, the reason for it, and how people can get involved.
 2. A 30 – 45 minute Q&A podcast with a leader on the process. This could likely be similar or identical to the webinar released by the Department in the Request for Information.
 3. A list of organizations and experts (see list in 1.6) who are willing to help interested communities understand the science.
3. *How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?*
 1. Host regular panel discussions with experts and invite communities to participate and ask questions.
 2. Record the sessions and release them as podcasts and YouTube videos.
4. *How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?*
 1. Engage with leaders from local communities who are willing and able to setup meetings with leaders in the local, State, and Tribal governments. Reach out to the Governors of each state directly. Identify the largest donors from each Governor's campaign and reach out directly to them and ask for an introduction.
 2. Once you're in the room with the key decision makers i.e. Governors and elected officials of each state, clearly and concisely communicate the idea around consent-based siting with them. Communicate the benefits, the reason it's necessary, and the opportunity available for them and their state. Offer it up as a win for them to participate in the fight against Climate Change while simultaneously providing jobs for their constituents.
5. *What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?*
 1. Stakeholders need to understand first and foremost the relative risk of a

consent-based siting facility and how non-existent it is compared to most other industrial processes. They need to know spent nuclear fuel from a commercial facility has never and is unlikely to ever hurt anyone. Without this clearly being explained, they're likely to push back.

2. They also need to know anticipated specifics about the proposed facility. How big is it going to be? How many buildings? How long with the fuel be there?

III. Interim Storage as Part of a Waste Management System

1. *How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?*
 1. Environmental justice will be served if millions of tons of carbon dioxide aren't emitted into the atmosphere, millions of solar panels disposed of as trash in poor countries, and millions of holes in the ground aren't drilled. Social equity will be realized if climate change is slowed to allow poor countries time to adapt, low-cost and reliable electricity is deployed all over the world, and slaves aren't forced to build solar panels in China. All of these things can be accomplished if we deploy nuclear power at a global scale. In order to do that, we must develop a waste management system. As such, I believe this question is worded poorly. It's not, how the department can ensure considerations are addressed in developing a system; rather, it's develop a system in order to ensure social equity and environmental justice are addressed.
 2. The Department can ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system by:
 1. Understand before being understood: the public will communicate its questions and concerns. Listen to them. It won't be necessary to act on or solve all of them, but the effort of engaging with the public will be welcomed.
 2. Build an educational campaign to answer the unknowns: after consuming the questions from the public, deploy an educational campaign providing answers to their questions and concerns.
 3. Engage with technical experts who are best suited to advise and build the waste management system: The United States of America is full of incredibly intelligent humans who have built unfathomably complex and mind-bogglingly impressive systems over the past 100 years. I'm 100% confident we will continue to build, develop, and deploy systems which are admired around the world. The Department should engage with these people to ensure the waste management system is flexible enough to allow for innovation and excellent engineering practices, and social equity

and environmental justice will be natural byproducts.

2. *What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?*

1. Co-locating multiple facilities within the waste management system.
 1. Benefits: sharing of resources (staff, knowledge, parts, etc.), exploits economies of scale, supply chain advantages, fewer communities to work with, simplifies process
 2. Drawbacks: doesn't normalize the waste issue and make it acceptable across larger populations or multiple communities, likely increases transportation costs from power plants to storage facilities, and increases space required at a single facility (unless doing subsurface sequestration)
2. Co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?
 1. Benefits: access to industrial infrastructure, access to labor and workforce, partnering with staff and local organizations, improved communication between organizations and community, normalization of waste and the waste process in public perception ("they put it right next to the University – it can't be that dangerous!"), and reinforcing the fact in the minds of everyone that this kind of facility is necessary to save the world with the cleanest and safest energy technology in existence.
 2. Drawbacks: few. No, actually – none. Seriously. There's virtually no downside. Prove me wrong.

3. *To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?*

1. It should not be a distraction. We need a permanent facility. The world is going to need more nuclear power over the coming millennia – not less. Don't let this process get in the way.

4. *What other issues should the Department consider in developing a waste management system?*

1. We should build one now.
2. Faster, faster, faster.
3. Git-r-dun!!!
4. Why? Because people are dying from air pollution. Those deaths are (indirectly) on the nuclear industry's hands and the Department's hands. Every single day that goes by, more people die. Let's solve this problem as quickly as possible to help save them.

Leave a Comment

Enter your comment here...

LinkedIn < <http://linkedin.com/in/markhinaman>> YPE < <https://ypenergy.org/denver/>>

Instagram < <https://www.instagram.com/markhinaman/>>

Fire2Fission < <https://fire2fission.com/>> , < https://wordpress.com/?ref=footer_custom_svg>

From: Eric Hirshik
Sent: Thursday, January 27, 2022 4:26 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

To whom it may concern:

I am a believer in using responsible ways of nuclear power generation as part of an overall plan to save the climate. At this time there aren't any permanent storage facilities for the nuclear waste generated by this type of energy. Until such a time when we can finally agree on how to store this waste on a permanent basis, consent based siting appears to be the best option for longer term temporary storage. Never let the perfect get in the way of the good! Thank you for giving me a chance to speak my piece.

Best regards,

Eric Hirshik

[Sent from Yahoo Mail for iPhone](#)

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From: Carol Hirth
Sent: Tuesday, March 1, 2022 12:50 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI for interim storage of spent nuclear fuel

The RFI and sny decisions about spent nuclear fuel minimally should consider:

- **Consent-based siting process**, including ideas on how we should build social equity and environmental justice into the process; thoughts on the role Tribal, State, and local government officials should play in determining consent for a community; and more.
- **Removing barriers to meaningful participation**, considering what resources might be needed to ensure potentially interested communities have adequate opportunities to participate in the process; ideas for how we might more effectively engage with Tribal, State, and local governments; and more.
- **Interim storage as part of a waste management system**, including thoughts on possible benefits or drawbacks to co-locating multiple facilities, views on to what extent development of an interim storage facility should relate to progress on establishing a permanent repository, and more.

Thank you,

Carol Hirth


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From: Cochran, Justin [REDACTED]
Sent: Friday, March 4, 2022 12:40 PM
To: Consent Based Siting
CC: Hochschild, David [REDACTED]; Bohan, Drew [REDACTED]; Nguyen, Le-Quyen [REDACTED]; Rider, Ken [REDACTED]
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: Chair Hochschild Letter to DOE RFI on CIS program Mar2022.pdf

Good day.

The attached letter provides the comments of the California Energy Commission Chair David Hochschild, the State's Liaison Officer to the United States Nuclear Regulatory Commission, on the role of interim storage as a part of the nation's waste management system.

Best Regards,

Justin Cochran, Ph.D.
Emergency Coordinator & Nuclear Advisor to
Chair David Hochschild
California Energy Commission
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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March 04, 2022

Dr. Kathryn Huff
Principal Deputy Assistant Secretary for the Office of Nuclear Energy
RFI: Consent-Based Siting and Federal Interim Storage
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

RE: Notice of Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities (86 FR 68244)

Dear Dr. Huff:

This letter provides the comments of the California State Energy Resources Conservation and Development Commission (Energy Commission) on the above-referenced action. The Energy Commission is California's primary energy policy and planning agency, with core functions that include evaluating and proposing mitigation for public health, safety, and environmental impacts¹ of proposed thermal power plants, including nuclear reactors. Since the adoption of California Assembly Bill No. 1632 (Blakeslee, 2006), the Energy Commission has taken the lead role in assessing the local costs, impacts, and policy issues associated with California's active and decommissioning nuclear power plants along the state's seismically vulnerable coastline.²

I am the Chair of the California Energy Commission and the State's Liaison Officer to the United States Nuclear Regulatory Commission (NRC). In my role as the Liaison Officer, I provide the NRC with information on matters pertinent to California including the state's radiological health, emergency preparedness, Energy Commission and California Public Utilities Commission actions, and state nuclear safety matters.

¹ The California Environmental Quality Act (CEQA) makes environmental protection a mandatory part of every California state and local (public) agency's decision-making process. The 2019 CEQA statutes and guidelines can be found at https://resources.ca.gov/-/media/CNRA-Website/Files/Programs-and-Projects/CEQA/CEQA-Homepage/2019_CEQA_Statutes_and_Guidelines.pdf?la=en&hash=28D5D3CF051762486FC0A43BB50921F85E30F8CC.

² California Assembly Bill No. 1632 (Blakeslee, 2006). Retrieved from http://leginfo.ca.gov/pub/05-06/bill_asm/ab_1601-1650/ab_1632_bill_20060929_chaptered.html.

California currently hosts one operating power reactor facility, three power reactor facilities at various stages of decommissioning, and multiple operating and decommissioning research reactors. As a member of the Agreement State Program, California has more than 1,600 specific licenses authorizing possession and use of radioactive materials. State leadership have consistently advocated for the safe and timely removal of radiological waste from Californian lands.

This letter predominantly focuses on the question of consolidated interim storage versus a permanent repository instead of the questions posed by the United States Department of Energy (DOE) request for information on how to site Federal facilities for the temporary, consolidated storage of spent nuclear fuel using a consent-based approach.³

Many parties previously provided detailed comments and input to the DOE's *Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste* initiative. The previous comments should be thoroughly reviewed by DOE staff and where appropriate, incorporated into this new initiative.⁴

Regarding consolidated interim storage, there are significant and valid concerns that any interim facility will become a de facto repository. One only needs to consider the current situation of the nations scattered, sometimes stranded, independent spent fuel storage installations (ISFSI) and the legacy waste sites. Concerns over radiological waste disposal and management is further exacerbated by the lack of a permanent repository and transportation program. The lack of a credible repository or transportation program is likely to hinder the development of a consolidated interim storage (CIS) facility. State, local, and tribal leadership have a valid reason to be leery of hosting a CIS facility without a clear closure and decommissioning window. Furthermore, the Western Governors' Association policy resolution states that no interim storage facility "shall be located within the geographic boundaries of a western state or US territory without the written consent of the Governor in whose state or territory the facility is to be located."⁵

It is my recommendation that the DOE prioritize the development of an integrated solution that incorporates permanent disposal, interim storage, and transportation. An integrated solution and approach have been recommended by the Blue Ribbon Commission on America's Nuclear Future, the National Academy of Sciences, the Western Governors' Association, and many others.

³ U.S. Department of Energy, Consent Based Siting Initiative <https://www.energy.gov/ne/consent-based-siting>

⁴ U.S. Department of Energy, *Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste*, January 12, 2017, Docket ID 2017-00670.

⁵ Western Governors' Association Policy Resolution 2018-10: Transportation, Storage and Disposal of Radioactive Waste, Radioactive Materials and Spent Nuclear Fuel.

Accumulated experience has shown that development of a successful waste management program requires a transparent and inclusive public process that builds trust and fully addresses facility and transportation considerations.⁶ The achievement of an equitable and ethical process or agreement will require engagement of the impacted entities in a transparent process with appropriate financial support and informational resources. There is still significant uncertainty and a contentious legacy surrounding the issue of nuclear waste management. A consent based process that communities and stakeholders nationwide find legitimate, effective, trustworthy, and practical will require careful reflection and attention to procedures in developing and implementing core principles of equality and consent while addressing challenges that can undermine them. Consequently, DOE should provide an initial outline of the meaningful roles' stakeholders have in all phases of this program as well as expected and negotiable authorities.

I have directed my staff to closely track this important topic and welcome future dialogue on this and related issues. Please send any future notices, correspondence, and documents to my Senior Nuclear Policy Advisor Justin Cochran, Ph.D., at the California Energy Commission, [REDACTED], [REDACTED], or by e-mail at [REDACTED].

Sincerely,



David Hochschild
Chair
California Energy Commission

⁶ *Blue Ribbon Commission on America's Nuclear Future, Report to the Secretary of Energy*, Chapter 6, January 2012. Retrieved from <http://energy.gov/ne/downloads/blue-ribboncommission-americas-nuclear-future-reportsecretary-energy>.

From: Ace Hoffman
Sent: Friday, March 4, 2022 7:01 AM
To: Consent Based Siting; [REDACTED]
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

March 4, 2022

To The Department of Energy:

This email is in response to your Request for Information regarding Consent-Based Siting and Federal Interim Storage.

As I write this, the largest nuclear power station in Europe, with six reactors, is "on fire" and "being attacked on all sides" by Russian forces.

As Bennett Ramberg wrote many years ago, Nuclear Power Plants are "Weapons for the Enemy."

I am including several essays in addition to this statement.

"Consent-based siting" of nuclear waste is utter fiction because unborn humans (and animals) cannot voice their opinion on whether they want to be born in a world filled with nuclear waste from a thousand reactors that operated long ago (about half of the thousand are on military ships and subs, the rest (called "civilian" reactors) are scattered in dozens of countries, mostly in the USA).

No sane person would EVER "consent" to live near nuclear waste, unless they are utterly desperate (or utterly corrupt), and even then they will need to be offered large bribes.

But there are many other reasons America has not found a solution to the nuclear waste problem, and other no country has found a safe disposal method either. All proposals thus far have some degree of risk, or have already proven to be unworkable. See below for more details including a patented partial solution that could be put into effect today, known as high-powered laser neutralization, which removes the fissile atoms (but creates fission products, so it's only a partial solution, but holds a number of very important advantages).

Don't be the enemy of humanity. Close ALL the nukes. Solving the high level nuclear waste problem will be a thousand times easier when it isn't growing by 10,000 pounds per DAY nationally and 50,000 pounds per day globally (not even counting the military waste).

Ace Hoffman [REDACTED]

Nuclear Waste: A problem today, tomorrow, and far into the future...
February 18, 2022

I live in Carlsbad, less than 20 miles south of San Onofre Nuclear Waste Dump, and have been studying nuclear power for more than 50 years.

Along the way I have interviewed, studied with, or read the books and articles by, numerous nuclear experts including metallurgists, engineers, nuclear physicists, mathematicians, statisticians, epidemiologists, medical professionals and many others.

A nuclear power plant's main product is radioactive waste. Not "electricity"! Yes, electricity is created and
708

immediately distributed; but the waste that is created remains, and must be very diligently stored for many eons afterwards. The effort required is enormous, is not cheap, and will not get cheaper over time.

Imagine having to repackage nuclear waste 100 years from now -- about the longest the current containers might last. Who would want to have that burden, just because 100 years earlier, people refused to use clean renewable sources for electricity?

Before use, nuclear fuel is "mildly" radioactive (you can hold a fresh fuel pellet in your hand with just a thin glove). After use in a reactor, the same -- but now "used" -- fuel pellet is ****millions**** of times more toxic. You can't go near it for even a second and it will remain hazardous for hundreds of thousands of years, mainly because of the presence of plutonium (often described as "the most hazardous stuff on earth").

The millions of pounds of used nuclear fuel at San Onofre is extremely dangerous and absolutely **MUST NOT** ever get released to the environment.

In addition to the plutonium, other highly toxic elements in the used nuclear fuel include radioactive strontium, cesium, iodine and many other elements. Living things mistake many of these radioactive elements for biologically useful, stable atoms, but when the radioactive elements decay, the energy released is extremely damaging. A single radioactive decay can damage thousands of chemical/biological bonds inside the body.

Despite these dangers, the United States has never found a solution to the problem of storing nuclear waste. (See below for a link to a review of past attempts.)

Nuclear waste has several properties which make it extremely difficult to safely store: It is extremely toxic, it is thermally hot, radioactively hot, and perhaps most importantly, over time it degrades any container you put it in, and accelerates anything else that causes degradation. There is no chemical bond which cannot be broken by a radioactive decay. Metal alloys weaken as they are bombarded night and day with radioactive emissions.

Nuclear waste is also a potent potential target for terrorists.

Additionally, any number of environmental disasters -- from earthquakes to tsunamis to meteors -- can destroy any container that is used to store nuclear waste.

Accidents also can happen: There are hundreds of locations where radioactive waste is stored in America, including about 70 spent nuclear fuel locations. All are vulnerable to some degree or other.

How safe is San Onofre? In my opinion, not very safe at all! The containers are incredibly thin: About 5/8ths of an inch on the sides, a few inches on top, and a few more at the bottom. An RPG (Rocket Propelled Grenade) would be able to breach a nuclear waste canister. It would only take a few "bad actors" to overwhelm the typical security force that protects the waste. Guards only carry pistols.

Southern California is a very precious place! I have lived here for more than three decades and cannot imagine having to move and never come back because one -- just one -- of San Onofre's nuclear waste casks was breached for any reason. But that is entirely possible: Each canister holds more radioactive cesium, for example, than was released by the Chernobyl accident.

We all can see the trouble Japan is having with the waste from the triple meltdowns at Fukushima. Far more radioactivity is being stored at San Onofre than has been released at Fukushima. Three reactor cores worth of nuclear fuel melted down at Fukushima. At San Onofre, one third of each reactor core was replaced every 18 months to two years for the entire operating period of the reactors. Nearly all used reactor cores remain on site, so San Onofre's spent fuel dump contains dozens of reactor cores, and their radioactivity is extremely high even though the reactors have not operated for more than 10 years.

There is only one reasonable, long-term solution for the world: Stop creating nuclear waste.

But as to what should be done with San Onofre's nuclear waste, that is **our** problem right now, and that is the risk we are forced to take thanks to SoCalEd making poor energy decisions.

Their first poor decision was to build Unit 1, which never ran very well but created mountains of waste. Then Units 2 and 3 suffered serious vibration problems which resulted in a primary coolant leak, and which could have been catastrophic if the failed steam generators had been just a little more severely damaged than they were in 2011. The plant never ran again.

Prior to that event, there had been numerous sudden shutdowns and extended outages. Over the years, Californians narrowly avoided catastrophe a number of times at San Onofre. Must we continue to risk destruction without even getting any benefit anymore? The answer is disturbing: Yes, we must.

I advocate for the use of much stronger casks, but this leads to the next problem: Stronger casks are much heavier, and transporting them is therefore more risky, considering the poor state of so many roads, bridges, underpasses, etc.. We would need many more casks and the fuel would need to be transferred from the current casks to the better, stronger casks, but any transfer operation is also risky, and exposes workers to additional radioactivity.

The fuel is likely to remain on site, in the current thin-walled casks for at least dozens -- and more likely hundreds -- of years.

So what is the best thing to do?

Californians should insist on two things: First: There must be radiation monitoring of EACH cask individually, as well as for the entire site as a whole, including radiation detectors with real-time public data streams so the public can know immediately if there is a problem, since evacuation, at least temporarily, is likely to be the only option if there is a problem, and the sooner the evacuation starts, the better. Second: A transfer facility needs to be available for immediately repackaging a leaking or damaged nuclear fuel canister.

The current system is NOT designed to be able to handle many very serious potential problems.

For example, if a tsunami were to flood the ISFSI* there is a real possibility that adequate cooling will not be possible, especially if debris clogs the vents. This could be catastrophic. There are underwater canyons offshore in the area around the nuclear waste dump which could collapse at any moment, and a wall of water hundreds of feet high could result (there is evidence in the hills to the east of San Onofre that sea water has reached such heights in the geologically recent past).

Another potential catastrophic hazard is from earthquakes: The ISFSI does not have "rebar" except on the bottom and on the top -- NOT in the part in-between. This was a serious design flaw, because it is entirely possible, in some earthquake scenarios, for the entire top to shift differently from the bottom, resulting in ALL casks bursting at the same time. (This would make the Fukushima and Chernobyl nuclear disasters seem like a stubbed toe in comparison.)

Of course, such an event is "unlikely" in the extreme. But it IS possible, because the fuel exists, and the ISFSI was poorly designed.

All the money in the world can't make San Onofre safe, but SoCalEd is actually being paid to store the fuel because the U.S. federal government promised to take it away for permanent disposal somewhere, and cannot keep that promise. San Onofre should be made to pay for the problem they created, and they should be required

to do a better job than they have done.

I've listed only a few ways they could greatly reduce the risk. There are many more, but SoCalEd only does the absolute minimum that the Nuclear Regulatory Commission requires. (The NRC has sole authority for "safety" at nuclear installations, which is a travesty in itself, since they are a "captured agency" which does what the nuclear industry wants them to do, not what the people need in order to be safe.)

Please see link, below, for a review of the first three quarters of a century of looking for a solution to the nuclear waste problem, including nearly two dozen quotes from my collection of over 500 books on nuclear power issues.

Best regards,

Ace Hoffman
[REDACTED]

Nuclear Waste Management: The view through the years...

<https://acehoffman.blogspot.com/2017/10/nuclear-waste-management-view-through.html>

* ISFSI: Independent Spent Fuel Storage Installation (as nuclear waste dumps like San Onofre are referred to by the Nuclear Regulatory Commission)

Nuclear Waste Management: The view through the years...

Dear Readers,

There is a long -- if often shallow -- history of looking at the nuclear waste problem. But it's still a problem. Below is a list of books in my collection (there are undoubtedly many others) on the subject of nuclear waste, or with significant sections about nuclear waste, with dates of publication and several quotes from each one. Many other books in my collection have some mention of the problem, going back to the 1940s (most that old simply deny it's a problem, saying we'll rocket nuclear waste to the sun, drop it under the polar ice caps, bury it in deep sea trenches, or reuse it in other reactors).

These quotes show the immense difficulty of attempting to isolate radionuclides, of transporting nuclear waste, and of finding a permanent repository or even interim storage. Again and again over the decades, people were sure all these problems would be solved "soon." Yet as of today, none of them have been solved. The problems remain intractable, and the solutions are still as elusive as ever.

Note: In a few cases, I have added some comments to the quotes, which are clearly delineated.

Ace Hoffman
[REDACTED]

'Population Control' Through Nuclear Pollution (1970, Tamplin & Gofman, forward by Paul Ehrlich (Chapter 8))

Quotes:

"We are producing waste products that must be maintained in isolation from the environment for a thousand years or more. Guarding this radioactive garbage is one of the prices that future generations will have to pay, in

addition to the genetic consequences they will suffer from the radioactivity which we are presently introducing into the environment, either deliberately or under the guise of waste disposal" (pg 170)

"A large nuclear electric plant producing 1000 megawatts of electrical power uses the same amount of uranium in one year as a 25 megaton uranium-fission bomb. And this means the production of strontium-90 and cesium-137 and other radioisotopes equivalent to that produced in such a 25-megaton bomb." (pg 171)

Everyone's Trash Problem: Nuclear Wastes (1979, Hyde & Hyde)

Quotes:

"There is no way of hurrying the decay from radioactive to non-radioactive; final disposal must be by natural decay." (pg 79)

"The search for places to store high-level radioactive wastes is not new. As long ago as 1957 permanent disposal was recommended by a special committee of the National Academy of Science -- National Research Council. Since then many ideas have been explored. A well-known one is to shoot long-lived wastes into space via rocket." (pgs 80-81)

Regarding deep sea burial: "Canisters would be buried in claylike ooze that covers the ocean floor in regions that are geologically quiet. They would be dropped from winch-equipped ships and would force their way 30 meters below the floor before coming to rest." (pg87) "One area being studied is 600 miles north of Hawaii." (pg 88)

Plutonium, Power, and Politics: International Arrangements for the Disposition of Spent Nuclear Fuel (1979, Gene I. Rochlin)

Quotes:

"There is no doubt that throughout the twenty-plus-year history of commercial nuclear power...it has been the assumption of nuclear industry and nuclear agencies alike that spent reactor fuel would be reprocessed." (pg 79) Note: That is undoubtedly why they currently prefer monitored, RETRIEVABLE storage solutions. But: "By early 1974...[d]ifficulties were reported from all quarters from reprocessing of higher burn oxide fuels." (pg 79)

"Fresh fuel charged to [a Light Water Reactor] is made up of about 3 percent U-235 and 97 percent U-238. After its full residence in the core (about three years for a PWR, four for a BWR), the spent fuel consists (by mass) of about 95 percent U-238, 1 percent plutonium, 1 percent residual U-235, and about 3 percent light elements produced by fission of uranium and plutonium. There are also small amounts of other heavy elements, particularly neptunium, americium, and curium..." (pg 83) Note: "High Burn-up fuel contains up to 5% U-235, and after use in a reactor, contains correspondingly more fission products, plutonium, etc..

"There are in principle three options for dealing with the spent fuel. It could be treated as a waste for ultimate disposal. It could be stored offsite, in surface or subsurface facilities, for an interim period ranging from one to several decades pending a decision as to whether it should then be disposed of or reprocessed to recover the fissile content. Or it could be stored for a period ranging from a few months to perhaps a decade and then reprocessed." (pg 81)

"The safety of a mined geologic repository can be analyzed in terms of three different time periods: 1) The operational period, when the repository is open; 2) The 'thermal' period, that is, the first few hundred years after closure, during which time the radioactivity and the heat production of the wastes are dominated by the fission products; 3) The actinide decay period, which extends to several hundreds of thousands of years. (pg 99)

"The back end of the nuclear fuel cycle is clearly in disarray." (pg 100)

Unpaid Costs of Electrical Energy (1979, William Ramsey (Chapter 5))

Quotes:

"...spent fuel is presently being stored temporarily at each reactor site, with the fuel rods immersed in pools of water. This present system is perhaps inelegant, but it would be surprising if this kind of local storage could not be continued safely over the next decades, or at least until such time as a permanent solution has been found to the waste problem." (pg 61)

"Critics of nuclear power...say that if the strontium 90 produced in one year of spent fuel were to be dispersed into river basins all over the country, it would be enough to contaminate the annual freshwater runoff of the United States to several times the acceptable limits." (pg 63)

"Storage in salt beds is not the only possibility; rock formations, ice caps, and the ocean floor have all been proposed as storage areas. Even shooting off the wastes somewhere into outer space has had its proponents." (pg 92)

Too Hot To Handle? (1983, 3 editors)

Quotes:

"Much of the concern about plutonium arises from the facts that chemical separation of plutonium from uranium is conceptually simple and pure plutonium can be handled rather easily because of its low level of radioactivity. The separation could be carried out without appreciable difficulty were it not for the fact that plutonium discharged from light-water reactors is mixed with actinides and highly radioactive fission products." (pg 52)

"Among the possibilities for disposal sites for radioactive wastes are continental geologic formations, the sea bed, ice sheets, and space beyond the earth's atmosphere." (pgs 53-54)

"The...radioactive waste management program is now widely considered to have been seriously deficient. President Carter acknowledged that 'past governmental efforts to manage radioactive wastes have not been technically adequate. Moreover they have failed to involve successfully the States, local governments or the public in policy or program decisions.'" (pg 165)

Management of Tritium at Nuclear Facilities (1984, IAEA)

Note: Tritium is a radioactive form of hydrogen. It is highly toxic.

Quotes:

"In BWRs the proportion of the [tritium] activity released with off-gases is 10 to 50%...[i]n PWRs 99% of the moderator and coolant activity [of tritium] is present in liquid phase, and 1% is in gaseous phase. Because of their low concentration, both gaseous and liquid tritiated effluents are released to the air after proper dilution, so the releases are much below the release levels permitted." (pg 5)

"In a gas container filled initially with T₂ [(tritium gas)] the pressure increases with time from radioactive decay to He₃, with the pressure ultimately reaching twice the filling pressure...the disadvantage of gas storage is the potential for [leakage] through valves. The advantage is that the tritium is easily recoverable for use at any time." (pg 28) Note: One of the main "uses" of tritium is as a trigger in nuclear weapons. It is also used in

emergency exit signs, graticals for rifle scopes, etc..

Nuclear Power in Crisis (1987, Edited by Andrew Blowers and David Pepper)

Quotes:

"As early as 1952 James Conant, the President of the American Chemical Society, asserted that nuclear energy would founder because the problem of radioactive waste disposal was unsoluble. It is not surprising that a man of Conant's eminence -- a former President of Harvard University and a member of the wartime US National Defense Research Committee that was intimately involved with the Manhattan Atomic Bomb Project -- should make such a sombre and prophetic assessment, as he had direct access to the key atomic researchers of the era...Another skeptic was Professor George L. Weil who wrote in 1955: 'The beneficial prospects associated with the development of nuclear energy have been widely publicized. On the other hand, discussions of the unpleasant aspects have been limited almost exclusively to the technical meetings and publications.' (Weil, 1955). It was Weil who extracted the first fuel rod from the first atomic reactor in Chicago, December, 1942." (pg 132; this chapter!

was written by Andrew Blowers and David Lowry)

"The Department of Energy (DOE) is investigating potential sites in the south and west for siting a deep underground repository, which it is hoped will be operating by the end of the [20th] century. The investigation poses the question of whether the earth, 1000 to 3000 feet underground, can contain radioactivity for one million years or so without releasing it, and highlights the problem of transporting high level waste over large distances, affecting many communities en route." (pgs 178-179; this chapter was written by Marvin Resnikoff)

Understanding Radioactive Waste (1989, Raymond L. Murray)

Quotes:

"The fuel is no longer suitable for operation in a reactor, but precautions must still be taken to avoid accidental criticality." (pg 67) "Of special interest [in designing dry storage] are the ability to remove decay heat with a safe cladding temperature and to protect the cladding against corrosion by use of an inert cover gas such as helium or nitrogen." (pg 69) "One concept is the Monitored Retrievable Storage (MRS), a large facility located geographically between the generating companies and the fuel disposal site. The fuel would be repackaged at the MRS for disposal." (pg 69) This book also describes some of the tests that transportation cask designs are supposed to survive: "...a 30-foot fall on a flat, unyielding surface...a 40-in. fall onto a metal pin 6 in. in diameter...a 30-min. exposure to a fire at a temperature of 1475 degrees F." (pg 95). (The book does not note, but it SHOULD be noted, that jet fuel burns up to 1500 degrees F., hot enough to significantly weaken steel containers. Gasoline burns at 1880 degrees F., LNG burns even hotter.)

Site Unseen: The Politics of Siting a Nuclear Waste Repository (1990, Gerald Jacob)

Quotes:

"...efforts in the early 1970s to site a repository at Lyons, Kansas, failed -- when state geologists revealed serious problems with the site. (pg 45) "Problems at temporary storage facilities, such as the leaking Hanford tanks, gave temporary storage a bad reputation." (pg 134) "While the [Nuclear Waste Policy Act] was meant to restore public confidence in Congress and the nuclear establishment, lack of confidence in existing and future institutions was used to justify permanent disposal in a geologic repository...The poor record of nuclear management over the past thirty years left little reason to assume it would be more effective in the future." (pg 135)

Trashing The Planet (1990, Dixie Lee Ray & Lou Guzzo (DLR signed copy))

Quotes:

"In 1968, the General Accounting Office recommended a vigorous long-term waste management program..." (pg 145) "...we have reached an impasse with the plan to put spent fuel into deep geological repositories. State after state has adopted the not-in-my-backyard attitude..." (pg 152)

Note: Ray believed the waste should be reprocessed to extract the "useful" fissile and industrial isotopes, and the remaining waste "should be disposed of in the ocean." (pg 153) Ray also claimed there are vast dead zones ("deserts in the sea") (pg 153) and that the current natural burden of radionuclides in the oceans overwhelm anything mankind could add. Ray opposed land-based solutions including Yucca Mountain, Hanford, etc..

The Nuclear Energy Option: An Alternative for the 90s (1983 - 1992, Bernard L. Cohen)

Cohen was sure that any and all nuclear waste solutions would be safe and feasible, at least compared to handling arsenic, and that terrorists would be more likely to bust a large dam, release a poison gas into a building's ventilation system, napalm a sports arena, or poison a city's water supply, than attack a nuclear facility (pgs 245 - 246).

Quotes:

"[w]e may eventually expect about 2 million cancers for each pound of plutonium inhaled by people." (pg 247)

"It...seems unlikely that an operating solar power plant can ever cost less than \$1,000 per peak kilowatt. Since their power output over day and night is only about 20% of the peak, this corresponds to a cost of \$5,000 per average kilowatt. The cost estimate for a new generation of nuclear power plants is under \$2,000 per average kilowatt." (pg 261). Note: In August, 2016 the average cost of PV (photovoltaic)-generated electricity was estimated to be about 15 - 20% LESS than "advanced nuclear" (source: US Energy Information Administration). The price difference is expected to continue to expand in favor of PV.

Atomic Harvest: Hanford and the Lethal Toll of America's Nuclear Arsenal (1993, Michael D'Antonio, forward by Stewart Udall)

Quotes:

"Called the Basalt Waste Isolation Project, the dump would be the final resting place for nearly all the nation's high-level radioactive waste." (pg 31) The project was cancelled in 1987, causing the loss of 1200 jobs in the area. (pg 211)

The Nuclear Waste Primer (League of Women Voters Education Fund, 1993 Revised Edition)

Quotes:

"In 1970, the Atomic Energy Commission tentatively selected a full-scale repository site in the salt deposits near Lyons, Kansas. The site was chosen without a formal search...the Lyons site was abandoned two years later...in 1974 the federal government again began a search for possible permanent repository sites, beginning with a survey of underground rock formations in 36 states...In February, 1983...DOE formally identified nine potentially acceptable sites located in Louisiana, Mississippi, Nevada, Texas, Utah, and Washington...in December 1984, the department recommended further study of sites at Yucca Mountain, Nevada; Deaf Smith County, Texas; and Hanford, Washington...all three state governments opposed the study of sites within their states." (pg 49) "The Nuclear Waste Policy Act of 1982 also required DOE to identify a site for a second high-level waste repository...the search for a second site centered on granite formations in 17 eastern, southern, and

midwestern st!

ates...Most of the hearings were contentious..." (pgs 49-50)

"The 1987 Nuclear Waste Policy Amendments Act did authorize DOE to site and construct a monitored retrievable storage facility, with strong restrictions. The department cannot select an MRS site until a permanent repository site has been recommended, and construction cannot begin until the NRC has issued a construction license for a repository. Only a limited amount of spent fuel can be stored at any time -- spent fuel equivalent to 10,000 metric tons of heavy metal before a repository is operating and 15,000 metric tons of heavy metal when a repository is operating." (pg 54)

"As of 1992, four counties and 16 Indian tribes had applied for grants to study the feasibility of locating a storage facility within their jurisdictions; three counties and seven tribes were awarded grants. However, one county and four tribe subsequently withdrew from the process. DOE initially decided not to conduct a siting process of its own but to rely on the voluntary process...to identify a site for an MRS in time for a facility to be operating by January 1998." (pg 54)

The Primer has a table, courtesy Worldwatch Institute, December, 1991, listing sixteen countries' target dates for their high-level waste burial programs. The earliest date given was Germany, 2008, followed by the U.S. and France, 2010 (two, Russia and China, did not provide estimates). (pg 63)

Environmental and Ethical Aspects of Long-Lived Radioactive Waste Disposal (Proceedings of an International Workshop organized by the Nuclear Energy Agency in co-operation with the Environmental Directorate, OECD, Paris, September, 1994)

Quotes:

"...it is inappropriate to use traditional discounting techniques over long periods of time...One reason the technique does not work is simple mathematics: since the present value of future benefits declines the farther out into the future they occur, even with a very low discount rate a health benefit saving thousands of lives 10,000 years from now would have a negligible present value." (pg 130)

"[D]iscounting can lead to inequitable distribution of health benefits: 'When using a 10 percent discount rate, for example, we value 100 lives saved 30 years in the future the same as 6 lives saved in the present.'" (pg 131)

"...it is difficult to see how we can decide on a method of final disposal which is 'irreversible', irrevocable, in the sense that the need for reparability is not met to any reasonable extent. Then too, it also becomes clear that the demands for safety in operation and reparability are, in part, in conflict with each other. Safety in operation requires, at least in a certain sense, a sealed repository. Reparability requires, in a somewhat different sense, an accessible repository. The technical question of how both these requirements can be met simultaneously is still insufficiently explored." (pg 291)

Not In My Back Yard (1994, Jane Anne Morris, published in San Diego, California)

Quotes:

"Today, the U.S. government in general, and the military branches in particular, are regarded as the perpetrators of the worst toxic cleanup mess in the nation: The problem of radioactive wastes. For a half century, the government has handled its nuclear-weapons-related projects without much interference...Public participation (except for paying for it) was next to nil." (pg 226)

"Even when national security was not an issue, Congress was often no help at all, as when it exempted the Department of Energy from OSHA (Occupational Safety and Health Administration) regulations." (pg 227)

Note: DOE is still exempted.

Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Nuclear Waste at Yucca Mountain, Nye County, Nevada (1999, U.S. DOE)

Quotes:

"Ceramic Coatings. A thin coating (1.5 millimeters (0.06 inch) or more) of a ceramic oxide on the outer surface of the waste package could increase the life of the waste package by slowing the rate at which the waste package will corrode." (pg E-3) Note: Despite plans to leave waste in thin (5/8ths inch) stainless steel canisters for decades at reactor sites and interim storage locations, there are no plans to coat the dry casks with ceramics.

"The probability of a criticality event would be very low. This is based on the Nuclear Regulatory Commission design requirement (10 CFR Part 60) that specifies that two independent low-probability events must occur for criticality to be possible and that this requirement will be part of the licensing basis for the repository." (pg H-3)

"[A]ircraft crashes on the vulnerable area of the repository are not credible because the probability would be below 1×10^{-7} per year, which is the credible limit specified by DOE." (pg H-11) Note: This statement and the calculations that accompany it were written BEFORE 9-11.

"Meteorite Impact. This event would not be credible based on a strike frequency of 2×10^{-8} per year for a damaging meteorite...This estimate accounts for the actual area of the Waste Handling Building roof given previously..." (pg H-13)

"Sabotage...The repository would not represent an attractive target to potential saboteurs due to its remote location and low population density in the area...DOE expects that both the likelihood and consequences of sabotage events would be greater during transportation of the material to the repository..." (pg H-16) Note: What does this opinion suggest about current waste storage policies?

Information Digest (2002, 2003 editions, Nuclear Regulatory Commission)

Quotes:

(2002 Edition): Currently, there are 20 operating independent spent fuel storage installation sites (ISFSIs) in the U.S." (pg 86)

(2003 Edition): Currently, there are 27 operating independent spent fuel storage installation sites (ISFSIs) in the U.S." (pg 86)

The Best Option for Nuclear Waste: We Don't Know How to Store it Forever. Let's Leave the Solution to a Generation That Will (2004, Technology Review Magazine Cover Story (M.I.T.'s Magazine of Innovation))

Quotes:

"Once the fuel was underground at Yucca, it would be hot enough to boil ground water into steam. Steam could corrode the containers or break up surrounding rock, raising uncertainty about secure burial." (pg 40)

"The Nuclear Regulatory Commission has determined that an F-16's crashing into the casks...is a 'credible accident.'" (pg 44) Note: An F-16 is a relatively small aircraft.

Too Hot To Touch (2013, Alley & Alley)

Quotes:

"The [Blue Ribbon Commission] report discussed at length the underlying reasons why the US nuclear waste program is in complete disarray..." (pg 317)

"In late 1975, the newly formed ERDA [Energy Research and Development Administration] announced a reinvigorated plan to address disposal of high-level radioactive waste. The Nuclear Waste Terminal Storage Project...was ambitious. Six repositories were to be identified...The first two...would start operating at a pilot scale by 1985...All six would be operating by the mid 1990s." (pg 178)

"On December 20, 1982...the House and Senate passed the Nuclear Waste Policy Act (NWPA)...President Reagan declared mission accomplished. 'The Act,' he proclaimed, 'provides the long overdue assurance that we now have a safe and effective solution to the nuclear waste problem.'" (pg 191)

Decommissioning Nuclear Power Plants (2014, NRC Pamphlet)

Quotes:

"Several nuclear power plants completed decommissioning in the 1990s without a viable option for disposing of their spent nuclear fuel because the Federal Government did not construct a geologic repository as planned." Also: "After cleanup...dry cask safely stored and monitored until disposal." The pamphlet claims decommissioning fund ranging from "\$300 million to \$400 million" are adequate, but does NOT note that that amount does not cover monitoring the spent nuclear fuel "until disposal."

Compiled by:
Ace Hoffman


The author, an independent researcher and computer programmer, has a collection of approximately 500 books and videos on nuclear issues, and has studied the problem for more than 40 years.

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

From: Ace Hoffman

Sent: Friday, March 4, 2022 8:05 AM

To: Consent Based Siting; k [REDACTED]; Sharon Hoffman; Bart Ziegler; Alice McNally; Cathy Iwane; Charles Langley

Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage (addendum to previous email)

March 4, 2022

To Whom It May Concern, DOE:

The following document was written in 2017 with the help of the inventor of spent fuel neutralization, however this author is entirely responsible for its contents.

This letter is an addendum to my previous email regarding Consent-based siting of nuclear waste.

Ace Hoffman
[REDACTED]

What is spent nuclear fuel neutralization, and why is it the BEST solution for nuclear waste?

I'm going to answer the second question first, because it's fairly easy to describe why spent nuclear fuel neutralization sounds like a good idea, but much more difficult to explain what it actually is. So first I'll go over why neutralization is the best solution for nuclear waste, then a bit of "elementary" nuclear physics, then a word or two about the inventor of the process, and then the explanation of how neutralization works.

Ace Hoffman
[REDACTED]

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Sections:
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- (1) Why is neutralization the best solution for spent nuclear fuel?
 - (2) What (if any) are other possible options?
 - (3) What is a "fissile" atom?
 - (4) What is an "isotope"?
 - (5) What is "radioactive decay"?
 - (6) What does it mean to "split" ("cleave" or "fission") an atom?
 - (7) When will an atom decay on its own?
 - (8) What is a "criticality" event?
 - (9) Why is radiation harmful to living organisms?
 - (10) What is "spent nuclear fuel" (also known as "used fuel")?
 - (11) Why is spent fuel so dangerous?
 - (12) Why is it so difficult to figure out what to do with the spent fuel?
 - (13) Who is Dr. Peter Moshchansky Livingston?
 - (14) How does laser-based neutralization work?
 - (15) Is this doable?
 - (16) Who wrote this document?
- =====

(1) Why is neutralization the best solution for spent nuclear fuel?

Spent nuclear fuel is extremely hazardous material. It contains highly toxic heavy metals, it is radioactive, corrosive, flammable, and, under the right conditions it is explosive.

Untreated spent nuclear fuel must be isolated from air, water, and humanity for hundreds of thousands of years. Currently, spent nuclear fuel is stored in over 2,000 thin-walled dry casks around the country, at dozens of locations, and there is enough additional spent nuclear fuel in nuclear reactor cooling ponds to fill over 10,000 dry casks just in the United States.

Neutralization is a process that reduces the long-term radioactivity of the spent fuel. Neutralization splits the Uranium-235 and Plutonium-239, as well as any other fissile (meaning "able to be split") atoms in the spent fuel, using laser-produced, collimated photons in the 10 to 14 MeV (Million electron Volts) range.

The neutralization process (technically known as the "photofission process") produces fission products from the fissile isotopes. While the creation of additional fission products is certainly unfortunate, the many advantages of neutralization strongly outweigh this major (but unavoidable) disadvantage.

Elimination of the fissile isotopes would solve the most serious and dangerous problems with spent fuel:

First, neutralization would eliminate (not just reduce) the possibility of criticality events (see section 8, below), which is by far the biggest danger with spent fuel. A "criticality event" (a.k.a. "chain reaction") occurs when neutrons ejected from the nuclei of fissioning atoms enter the nuclei of other fissile atoms, causing those atoms to also split apart and give off more neutrons, in a cycle that increases exponentially over time. During a criticality event in spent nuclear fuel the chain reaction would not occur at anywhere near the speed of the chain reaction in a nuclear bomb, but it can occur fast enough and release enough heat to cause a massive thermal (i.e., non-nuclear) explosion, which would spread the nuclear spent fuel over a wide area. Estimates range from over 40 square miles (Nuclear Regulatory Commission) to thousands of square miles that would be permanently or nearly permanently contaminated and have to be abandoned. Large portions of the fuel would ! also be vaporized, to be carried globally by the wind. Statistically-significant health effects from a used-fuel accident could occur as much as 500 miles downwind (F. von Hippel, Princeton).

Virtually all experts on nuclear waste agree that avoiding a criticality event is the #1 task of any waste management system (example: T. Palmisano, SoCalEd). Airplane strikes, earthquakes, tsunamis, fires and terrorist attacks, as well as degradation of the internal components of the fuel assemblies that keep the fissile material separated, can all cause a criticality event by rearranging the configuration of the spent fuel inside a dry cask. The fuel pellets are normally carefully separated from each other both to help dissipate heat and to avoid a criticality event.

Second, neutralization would eliminate the risk of proliferation, which requires reprocessing the spent nuclear fuel to separate out the Uranium and Plutonium atoms in the waste, and then enriching the fissile atoms' percentage to make an atomic bomb (a mixture with at least 90% fissile atoms is generally required).

Third, neutralization would eliminate the possibility of reusing the fuel in meltdown-prone future reactors (ALL reactors are prone to -- or at least capable of -- suffering a meltdown).

Fourth, neutralization reduces the necessary storage time by a factor of about a thousand -- three orders of magnitude -- from at least half a million years (for the plutonium) to about half a millennia (for the fission byproducts). Nothing humans have ever created is expected to last for hundreds of thousands of years, but Plutonium-239 has a half-life of 24,100 years, which means it must be isolated from the environment for ten to

twenty times that length of time. Uranium-235 has a half-life of about 700 million years. (The main radioactive danger from "old" spent fuel -- after the initial load of fission products have decayed -- is caused by the radioactive daughter products created by the decay of the Plutonium and Uranium.)

If an accident in the left-over waste stream were to occur after neutralization (far less likely than before neutralization, mainly because the possibility of criticality events would have been eliminated), the time-span of hazardous effects of the accident on the environment would be reduced to about 20 human generations -- from at least 20,000 human generations.

And on top of all that: Neutralization can even be done AT A PROFIT -- because of the heat energy produced in the process (small compared to a nuclear reactor, and minuscule compared to an atomic bomb, but enough to make the process energy-positive). Another potential source of profit would be from the production of a variety of isotopes that already have industrial or medical uses.

(2) What (if any) are other possible options?

The current dangerous approach favored by some European nations is to reprocess the spent fuel rods by dissolving them in acids and then chemically separating out the highly radioactive daughter products such as Iodine 131, Cesium 144 and Cesium 137, then remove the Cadmium, Xenon (if any is left) and other slow neutron absorbers. When that is complete, the remainder is mixed with fresh Uranium Oxide and reformed into new fuel rods. This reconstituted mixture is called Mixed Oxide ("MOX") fuel and is compounded such that it cannot be turned into bomb material. However, after one or two fuel cycles the chemical methods no longer suffice to produce a re-usable fuel material. At that point, long term storage is needed.

Another dangerous but technically possible method of reducing the actinides (elements from Actinium (with 89 protons) to Lawrencium (with 103 protons)) in spent fuel is to place the fuel rods in a specially-constructed "breeder" reactor that can still fission the actinides despite the accumulated neutron absorbers in the fuel (this is made possible by using "fast" neutrons). However, this process "breeds" Plutonium (hence the name of the process) from the Uranium, resulting in an increased proliferation risk.

(3) What is a "fissile" atom?

The definition of a "fissile" atom is an atom whose nucleus can be split (fissioned) by a high-energy subatomic impact. This results in two (sometimes more) large fragments and a variety of smaller sub-atomic particles which are expelled at great speed -- nearly the speed of light. For example, "Alpha" particles are expelled at about 98% the speed of light, and "Beta" particles are expelled at about 99.7% the speed of light. Excess energy in the form of heat (fast-moving particles) is always a byproduct of the fission process.

In American reactors (both Pressurized Water Reactors (PWRs) and Boiling Water Reactors (BWRs, which are also pressurized, but not as much)) the splitting of atoms is accomplished with "slow" neutrons. When fissile isotopes such as Uranium-235 are split (fissioned), usually a few neutrons are expelled. These neutrons exit the nucleus of the atom at an extremely high speed. In American reactor designs, for a sufficient number of those neutrons to collide with the nuclei of other fissile atoms in the fuel and split those atoms in a chain reaction, the neutrons need to be slowed down. In PWRs and BWRs the neutrons are slowed down with "light" water (described below). Neutrons, being neutral in their electrical charge, are able to "get through" the electron cloud that surrounds the nucleus of an atom. Charged particles such as Beta particles (charge -1) and Alpha particles (charge +2) are deflected away from the nucleus by the electron clouds.

In order to achieve a sustained "chain reaction" in a nuclear reactor, it is necessary to bundle thousands of pounds of uranium and/or plutonium together in a relatively small space.

(Side comment #1: Atomic bombs use far less fissile material than a nuclear reactor, but compress it to a much smaller space in order to achieve a chain reaction resulting in a nuclear explosion. (Nuclear power reactors can be described as very slow nuclear bombs.)

(Side comment #2): There are other types of reactors. Canadian "CANDU" reactors, for example, use deuterium-enriched "heavy" water instead of "light" water to slow down the neutrons. Deuterium is a stable isotope of hydrogen with one neutron in addition to the single proton in its core. It's called "heavy" water because it is about 11% more dense than "light" water. Only 0.0156% of "light" water hydrogen atoms are deuterium, but "heavy" water has about 99.75% deuterium hydrogen atoms. What the nuclear industry calls "light" water is what runs out of your tap.

(4) What is an "isotope"?

Different isotopes of an element all have the same number of protons in their nucleus and the same number of electrons surrounding their nucleus, but different numbers of neutrons in their nucleus. Since the number of electrons is the same, different isotopes of an element react -- chemically -- the same. Living organisms cannot distinguish between different isotopes of an element.

(5) What is "radioactive decay"?

Fissile atoms (and some non-fissile atoms) are "radioactive" which means they will eventually decay on their own, usually by ejecting, at very high fractions of the speed of light, either an Alpha particle or a Beta particle. A Gamma Ray is usually also emitted in the process.

Alpha particles are extremely dangerous because they are so massive (on an atomic scale) and because they have a strong positive electrical charge from their two protons. They cannot penetrate solid matter very far: For example a single sheet of newspaper is an impenetrable barrier to an Alpha particle. But if an Alpha particle is ejected from an atom that is already inside a living organism, it can do a lot of damage. Alpha particles become Helium atoms after they slow down and "steal" two electrons from almost any atom nearby.

Beta particles become electrons when they slow down. Beta particles can penetrate several inches of human flesh.

Both Alpha particles and Beta particles are "charged" particles, because they have an unbalanced number of protons versus electrons when they are ejected from the nucleus of an atom. Alpha particles have two protons (along with two neutrons) and no electrons, Beta particles have no protons (and no neutrons) and one electron. The electrical imbalances are the main reason these particles are hazardous to human health: After being ejected, as they pass close to other atoms and molecules they produce "free radicals" in the body by stealing electrons from other atoms or by knocking electrons out of their orbits.

Gamma Rays are high-energy electromagnetic emissions called photons (the same as what a light-bulb emits, but at much higher energy levels). Gamma rays are often produced when an atom fissions or decays. Gamma rays travel at the speed of light, have no mass and no charge, and can penetrate completely through the human body. When they collide with matter they can displace electrons and alter atomic arrangements in molecules.

Neutrons are also released by spent nuclear fuel. Although they are neutrally charged, they are relatively heavy and are very damaging. Free neutrons (not bound up with one or more protons in the nucleus of an atom) decay by emitting a Beta particle (and sometimes a Gamma Ray) and become a Hydrogen nucleus (one proton). The half-life of a free neutron is just over 10 minutes. Sometimes the emitted electron (Beta particle) remains with the newly-created proton, but very rarely.

(6) What does it mean to "split" ("cleave" or "fission") an atom?

Splitting an atom is not the same as a radioactive decay: Instead, the usual process (in a nuclear reactor or an atomic bomb) is to bombard the atom with neutrons, and eventually one is "captured" in the nucleus of the fissile atom. This causes the atom to cleave, or split into two approximately equal (but rarely exactly equal) portions, and usually several neutrons are also released. The large fragments that are left when atoms are split are called "fission products," which are almost always also radioactive. One can think of the reason fission products are radioactive this way: They have too many neutrons to be stable, because as you go up the periodic table from hydrogen (1 proton and (in most cases) no neutrons) to plutonium (94 protons and 145 neutrons (for Pu-239)) and beyond, the proportion of neutrons to protons in the nucleus of stable isotopes increases. So when you cleave an atom near the top end of the periodic table, the resultant fractions -- or "fission products" -- have far too many neutrons to be stable.

The sum of the masses of the two fission products and any neutrons that are also released does not add up to the full mass of the original fissile atom because the reaction emits energy as well, mainly in the form of Gamma Rays. The energy released produces heat -- the heat produced in an atomic explosion is far hotter than the sun. Under much slower fissioning rates, the energy released provides the heat for nuclear power reactors, and is used to boil water. For example: A Uranium-235 fission event might create a Cesium-137 atom and a Rubidium atom, as well as releasing a number of neutrons. (The particular isotope of Rubidium that is created will depend on how many neutrons are also released.) Both the Cesium and the Rubidium atoms have too many neutrons to be stable. At some later time, the fission products will decay; for example the Cesium-137 atom will emit a Beta particle to become Barium-137. In 85% of the cases, the Barium is created with an excited nucleus, so that! after some time it emits a 0.662 MeV Gamma Ray photon. In the remaining 15% of cases, the new Barium atom is already in the ground state and does not emit a Gamma Ray. (This is technically called the branching ratio.)

(7) When will an atom decay on its own?

A radioactive atom is in an "excited" state which means it has more energy than it can keep. As to exactly when any particular radioactive atom will decay, that's guesswork. However, any sufficiently large sample of atoms of a particular isotope will decay, statistically, with very predictable mean times. For example, the half-life (the time it takes for half the atoms to decay) for a reasonably large quantity of Plutonium-239 (say, a milligram, which may not sound like much, but is millions of trillions of atoms of any element) is about 24,100 years. The half-life of Uranium-235 is about 700 million years. The half-life of Uranium-238 is about 4 1/2 billion years, and yet there are so many atoms in a single milligram of U-238 that -- for many centuries -- about a million Alpha particle decays will occur every 24 hours. (The rate will slowly decline as the U-238 is used up.)

Most fission products have much shorter half-lives than Uranium and Plutonium: 30 years or less for nearly all of the fission products. There are seven known fission product isotopes that have much longer half-lives, but fortunately these are created only in relatively minute quantities in nuclear reactors, by natural decay, and by the neutralization process.

(Side comment #1): Approximately 3,000 different isotopes are known for all the elements from atomic number 1 (Hydrogen) through atomic number 118 (Oganesson). Most of these isotopes are radioactive. All elements above lead (atomic number 82) have no stable isotopes, and Technetium (atomic number 43) and Promethium (atomic number 61) also do not have any stable isotopes.

(Side comment #2): The seven long-lived fission products in spent nuclear fuel are: Technetium-99 (211 thousand years), Tin-126 (230 thousand years), Selenium-79 (327 thousand years), Zirconium-93 (1.5 million years), Cesium-135 (2.3 million years), Palladium-107 (6.5 million years) and Iodine-129 (15.7 million years).

(Side comment #3): The process that determines the moment of a nuclear decay is how soon a nucleus in an excited state can emit a Alpha or Beta particle, and/or a Gamma Ray, to drop down in energy level to the ground state (or to an intermittent, less excited, state). The difference in energy levels "before" and "after" a nuclear decay is known as the emission energy. An exact prediction of the time is not possible for several reasons, including the quantum-mechanical Heisenberg uncertainty principle, which states (among other things) that one cannot measure both the position and the velocity of a particle accurately at the same time (you would need to know both to know the exact energy level of the excited state).

There is a reciprocal relation between the spread in the before- and after-emission energies (known as the "line width") and the decay time. The broader the line width, the faster the decay rate. Hence long lived isotopes emit particles with very narrow energy line widths.

(8) What is a "criticality" event?

A criticality event occurs not from proximity of fissile atoms per se, but from neutrons emitted by fissioning atoms being absorbed by the nuclei of other atoms, causing those atoms to split. The word "criticality" means that on average there is more than one neutron that is released per fission event caused by a previous fission event.

Neutrons that have slowed down have a much greater chance of being absorbed by another atom's nuclei. Thus, materials (such as water) that moderate (slow down) the neutron can result in many more fissions. This is one reason why putting water on a spent fuel fire -- if you could get close enough to it -- might be a terrible mistake.

Atoms that absorb neutrons, including heavy atoms that don't fission, will inhibit criticality.

(9) Why is radiation harmful to living organisms?

Radioactive decay products (Alpha particles, Beta particles, Gamma Rays, x-rays and neutrons) can all damage DNA, although the precise mechanisms vary. In general, all forms of radiation knock electrons out of their orbits, pushing or pulling them away from atoms and molecules, causing those atoms and molecules to become "ionized," and sometimes changing the configuration of the atoms in a molecule (perhaps turning a protein into a carcinogen by rearranging the precise positions of the atoms).

Neutrons, if they are slow enough (called "thermal" neutrons), can enter the nucleus of many elements, causing that atom to become radioactive in a process known as neutron activation. At some point in the future the atom will release a decay product of its own. Neutrons are very damaging to living tissue. Neutron activation can also contribute to the eventual breakdown of materials that are used to contain spent nuclear fuel, such as stainless steel, which is an alloy of several different elements.

When a Gamma Ray encounters matter, it is most likely to collide with an electron (Gamma Rays rarely collide with a nucleus of an atom, except for very powerful Gamma Rays). When a Gamma Ray collides with an electron, the electron gets ejected from its orbit at tremendous speed, often having absorbed all of the energy of the Gamma Ray. The ejected electron (called a "Compton" electron) then collides with other electrons, knocking them out of their orbits, and leaving a path (or "cloud") of destruction (dead and damaged cells) in its wake. These dead cells can cause inflammation, and if they are among cells that are not replaced in the body (such as heart muscle cells and brain cells), the damage will be permanent. Also, if the damage is to the DNA within the cell, the cell might reproduce (and/or possibly also die) at a different rate from normal, which can be a cause of cancer.

In addition to being unable to distinguish radioactive isotopes from non-radioactive isotopes of the same element, the human body (and other living things) can mistake many fission products for useful atoms such as mistaking radioactive Strontium for stable Calcium, or radioactive Cesium for stable Potassium.

(10) What is "spent nuclear fuel" (also known as "used fuel")?

New, unused nuclear fuel pellets for American styles of reactors originally contain from about 3% to about 5% Uranium-235 oxide (U-O₂), and the rest (about 95% to 97%) is Uranium-238 oxide. The fuel pellets (about the size of a pinky bone) are contained in long fuel rods (12 to 15 feet in length), which are usually made of Zirconium. The Zirconium-clad fuel rods are bundled into assemblies of about 200 to 250 fuel rods each. There are as many as 200 fuel rod bundle assemblies, and millions of fuel pellets in a nuclear reactor at any one time. The oldest 1/3 or 1/2 of the assemblies are replaced every 18 months (1/3) or two years (1/2), depending on original U-235 enrichment percentage and power output ("burn-up") during the previous period.

Once the fuel assemblies are removed from the reactor, the fuel is considered "spent," but it has become about ten million times MORE radioactive -- and more toxic -- than "fresh" (unused) nuclear fuel. Spent fuel must be cooled in a pool under about forty feet of water for at least five years after being removed from the reactor.

(11) Why is spent fuel so dangerous?

Spent nuclear fuel is extremely toxic. Whereas bare, unused nuclear fuel pellets (fuel that has never been placed inside a reactor) can be handled with gloves (to protect from Alpha particles), fuel pellets that have been in a reactor for four to six years are so radioactive that, it's said, you could not pass next to one pellet on a motorcycle at 60 miles per hour without receiving a fatal dose of radiation.

The main health risks from spent fuel comes from the fission products with relatively short half-lives, and from the Plutonium, with a half-life of about two dozen millennia.

(12) Why is it so difficult to figure out what to do with the spent fuel?

Most of the spent fuel is Uranium-238, which is not "fissile" and cannot be used to create a nuclear explosion, but it is still a hazardous substance, both as a heavy metal and because of its radiological properties.

Spent nuclear fuel is a proliferation risk because about 2% of used reactor fuel is left-over, unfissiled Uranium-235 and artificially-produced Plutonium-239 (created when a Uranium-238 nucleus absorbs a neutron and then ejects a beta particle). Both U-235 and Pu-239 can be extracted and used to make nuclear bombs. The

Plutonium can be separated by a relatively simple chemical process; the fissile Uranium isotope would need to be chemically separated along with the rest of the Uranium and then enriched using a long series of centrifuges or some other process.

An additional problem for spent fuel management is that radiation destroys containers for the spent fuel at the atomic level: It can rearrange the atoms in protective alloys (such as so-called "stainless" steel) that surround the fuel, leading to fissures and cracks, which can allow radioactive gases to escape. Radioactive gases that are produced by the nuclear reactions can crack fuel rods and the ceramic fuel pellets themselves.

Over the enormous length of time the spent nuclear fuel is hazardous, any containment designed to keep the fuel separated from itself can deteriorate, allowing the fuel to rearrange into a configuration that can cause a criticality event. A criticality event in spent nuclear fuel can release enough energy in a short enough amount of time to cause a massive explosion -- NOT anywhere near the speed and size of an atomic bomb, but nevertheless powerful enough to vaporize the spent fuel, releasing trillions of nanoparticles into the atmosphere, which can travel for thousands of miles, and contaminate the surrounding land around the site.

Another hazard of spent fuel comes from the Zirconium ("Zirc") cladding. Zirconium is pyrophoric and must be kept away from air, and it can decompose water into an explosive mixture of Hydrogen and Oxygen.

America currently has no permanent storage method for spent nuclear fuel, despite having produce nearly 100,000 tons of it over the past 70 years (including commercial and military production). Temporary storage in thin-walled "dry casks" and massive "spent fuel pools" is both risky and expensive. Other countries have either no permanent solution, or in one or two cases, very expensive schemes which may not -- or, more probably, won't -- work.

(13) Who is Dr. Peter Moshchansky Livingston?

Dr. Livingston is an inventor with more than 40 patents to his name, mostly for chemical processes and related equipment. Dr. Livingston is also an atomic bomb test military veteran. Dr. Livingston not only witnessed a number of bomb tests in Nevada, he took an active part in carefully measuring their effects, using instruments (such as oscilloscopes) placed in tunnels at various distances from the underground blasts, which were protected with heavy doors designed to close in fractions of a second -- after the initial explosion but before the pressure wave struck (the doors didn't always work!). While working at the Nevada Test Site (as it was then called), he also calculated and measured the effects of the Electromagnetic Pulse (EMP) from above-ground tests, and many other aspects of atomic explosions.

Approximately seven years ago Dr. Livingston applied for a patent for the process of laser-based neutralization of spent nuclear fuel. Earlier this year (April, 2017) the U. S. Patent Office approved Dr. Livingston's patent. It had languished for about 6 1/2 years, only to finally be challenged and initially rejected by the patent office last fall (2016), and then, after review, all the important aspects of the patent were accepted. (One of the original challenges was that "collimating" the photons was not a new concept, it can be done with flashlights, for example. But the review agreed that collimating light (photons) with a flashlight, versus collimating with a laser, are in fact vastly different things.)

Dr. Livingston's original patent application and the final version are available online for all to see. Here is the URL for the original patent application:
<http://goo.gl/7ro0tZ> (goes to the USPTO).

The patent number is: US 9,613,726 B2, and is also available online.

(14) How does laser-based neutralization work?

Atomic bombs and nuclear power plants use neutrons, but you don't need to use neutrons to split the fissile isotopes. You can use other high-energy particles or rays. Very high-energy collimated photons produced by lasers can be used. This is the basis of Dr. Livingston's process.

For photofission to occur, the photons must impact the fissile atoms, which are inside the spent fuel rods. Although the cross section of the nuclei for the actinide series of elements is small, for stopping Gamma Rays in the 10 to 14 MeV range it is not insignificant (~0.5 barn (a "barn" is the standard measure of the diameter of an atomic nucleus)).

The first step is to obtain the collimated photons. Although this aspect has not been finalized, prior devices have shown how it could be done. Swiss researchers, for example, have demonstrated a similar concept which produces x-rays in the KeV range. When electrons from a "free electron laser" (F.E.L.) are passed through a special type of crystal, very high energy Gamma Rays are emitted.

Here is Dr. Livingston's description of how this could be done:

"The free electron laser in this manifestation does not employ [a] magnetic sandwich wiggler, nor does it have any feedback route. The wiggler could be a crystal structure in which the passage of electrons are bunched in a manner somewhat similar to a klystron [(a "linear-beam vacuum tube" used to amplify high frequency radio waves)]. Of course, bunching the electrons creates photons co-moving with the electrons that gather power from and slow down the electron stream. Eventually a nearly collimated beam of photons is produced with an energy of the initial electron stream." (From Dr. Livingston's letter to a fellow scientist, forwarded to this author.)

But where would the high-energy electrons come from? Dr. Livingston suggests that they could come from the spent fuel itself -- for example, from the Cobalt-60, which emits Gamma Rays of approximately 1.3 MeV. When these high-energy Gamma Rays impact electrons, sometimes all of the energy is transmitted to the electron.

The next step is to organize these electrons. Dr. Livingston again: "To create a dense electron cloud I would design a magnetron type cavity in which the magnetron field strength is sufficient to keep the electrons moving in curved or even circular orbits." After that, a "magnetic prism" would select out the 1.3 MeV electrons, followed by "focusing lenses" to guide free electrons into a collimated path.

The electron beam then enters an accelerator using "pulsed laser beams" with peak energy levels in the 10s of MeVs. What emerges are "spent" electrons (which, being charged particles, are easily "bent" out of the way) and collimated photons of the necessary energy level.

Dr. Livingston again: "With this source of Gamma Rays, a spent fuel rod will absorb most of the Gamma Rays, of which some will induce photofission. Of course neutron poisons have no influence on the process.

"It is [a] matter of a simple calculation to show that the recovered radiant energy, converted to heat, would generate enough electrical power to run the gadget.

"At the end of the process, a 2% concentration of fissile material in the spent rod could be reduced to nearly zero, thus reducing the required dry storage time from 500,000 years to perhaps several hundred."

(15) Is this doable?

Absolutely. It's not as "efficient" as fissioning atoms with slow ("thermal") neutrons in a nuclear reactor, but that's not the point. Besides, slow neutrons cannot penetrate deeply into a spent fuel rod because the rods have become loaded with "poisons" (the nuclear industry term, also known as "absorbers") during its time in the reactor. (These "poisons" are the reason the fuel was removed and replaced: It could no longer sustain a profitable chain reaction, even though many fissionable atoms (some of the U-235 and newly-created Pu-239) still exist in the fuel.)

Nothing in this process is unattainable. Although as yet no collimated (or nearly collimated) beam of Gamma Rays has been devised, there are plans for a special type of free electron laser using pulsed laser fields as accelerators that might work. To bring the process to "industrial realization" will still require substantial work -- and money -- but the funding needed will be small compared to the ultimate costs of spent fuel storage or worse: The cost of a fire and/or criticality event at a spent fuel storage site.

The advantages of using neutralization are overwhelming for a nation -- and a planet -- that is now swamped in nearly a hundred thousand tons of spent nuclear fuel (in America alone, with nearly five times that amount globally), with no safe way to store it, no safe place to put it, and no safe way to get it there even if there was a place to store it. Neutralization would be accomplished at the site where the fuel was generated, making transportation vastly safer and easier, because there would no longer be any danger of a criticality event.

(16) Who wrote this document?

Ace Hoffman is a computer programmer, and has been researching nuclear issues as a private citizen for approximately 45 years. Hoffman has interviewed scores of experts, including scientists who worked on the Manhattan project, molecular biologists, epidemiologists, nuclear engineers and nuclear physicists. Opinions expressed here are his own, as are any mistakes.

Related essay: Nuclear waste management through the years:
<https://acehoffman.blogspot.com/2017/10/nuclear-waste-management-view-through.html>

This message does not originate from a known Department of Energy email system.
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From: Loni Hollenbeck
Sent: Monday, February 28, 2022 1:29 PM
To: Consent Based Siting
Subject: [EXTERNAL] Att. Alisa Trunzo

From;
Loni D. Hollenbeck



Re;
Dept. Of Energy
Notice of Request for Information, (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities

Agency: Office of Spent Fuel and Waste Disposition, Office of Nuclear Energy, Dept. of Energy.

Dear Ms. Alisa Trunzo

My name is Loni Hollenbeck and I am trying to contact you in response to the above mentioned RFI which to my knowledge has NOT been made public in the Humboldt Bay area of Northern California, an area that has the miserable distinction of housing, at least temporarily, PG&E's spent fuel facility on a short bluff known as Buhne Point overlooking Humboldt Bay.

I say 'temporarily' due to the fact that the containment vault that holds five spent fuel canisters and one Greater Than Class 'C', (GTCC), canister which will not remain on that bluff as that bluff has a history of significant erosion costing the federal government millions of dollars in an attempt to harden the bluff. Buhne Point used to extend out into Humboldt Bay approximately 1400 feet and stand approximately 100 feet above sea level, Buhne point is now approximately 64 feet high with the top of the vault approximately 44 feet above sea level.

The disturbing part of this scenario is this, Canister #6 does NOT have it's mandatory lid welded on top, the top is merely sitting on top of the canister, to quote;

PG&E Response to NRC Letter dated April 30, 2019, "Request for Additional Information for the Technical Review of the Application for Renewal of the Humboldt Bay Independent Spent Fuel Storage Installation License No. SNW-2514 (CAC No. 001028)"

PG&E Response to RAI 2-1, Parts 9 and 13

13. As discussed in response to RAI 2-1, Part 13, in Pacific Gas and Electric Company (PG&E) letter dated July 1, 2019, there is no lid for the Greater Than Class C (GTCC) Waste Container's (GWC) inner shell. There is a space between the top of the inner shell and the bottom of the GWC lid bottom which stores GTCC waste components. The sizes and shapes of the GTCC waste pieces preclude movement out of the inner shell (see drawings referenced in LRA Table 2-12). However, because the GTCC waste pieces protrude above the top of the inner shell inconsistent with the GTCC waste shielding analysis, the shielding analysis was updated to reflect this configuration. The revised shielding analysis demonstrates the shielding calculation conclusions regarding doses from the HI-STAR HB GTCC remain valid and are consistent with the offsite dose analysis.

So here are the problems;

1) PG&E was supposed to leave this material in transportable containers to be taken off site at some time in the future, this #6 canister is NOT transportable.

2) The only machine that can move these canisters is the Vertical Cask Transporter which was built specifically for the job, at 29 feet long, 19 feet wide weighing approximately 95 tons unloaded and licensed for use at both PG&E's Humboldt Bay and Diablo Canyon Nuclear Power Plant ISFSI, it is scheduled for decommissioning in the next few years.

3) The first five canisters weigh approximately 85 tons each, that's about 425 tons, we'll credit #6 for as much bringing the total to around 500 tons. The concrete vault itself may be in the 150-200 ton range, so we're looking at around 650-700 tons sitting on sand, no pilings or foundation just sand. That much weight on that small of footprint puts a tremendous load on the bearing soils, which project out from under the vault at an angle extending downwards. It is the western projection of that angle that is the Achilles Heel of the vault. Waves don't need to top the vault, as PG&E indicates to prove threatening, all the waves have to do is reach the bearing soils on the western side and once they do then the liquification that'll take place will be immediate and bring down the bluff that is itself resting upon those vault bearing soils. To be clear, the feeling will be as if one is standing on the beach with an outgoing wave behind one, and when the water recedes it takes the sand right out from under one's feet, that's what is going to happen on Buhne Point and when that happens the bluff will slide down filling the gap between the vault and the bay making a nice ramp for the vault to roll down and into Humboldt Bay, and when that vault rolls over and the bottom becomes the top then everything in those canisters gets turned upside down and now we have #6 canister without a lid welded on top dumping it's load onto the bolted lid that uses a gasket.

Now we have the hot material from #6 canister sitting on the upside-down lid with bay water on the opposite side of the GTCC material, the question then becomes, How long is that gasket going to last when it is being subjected to that heat on one side and cold on the other before it ruptures and creates the world's first Nuclear Powered Geyser.

Lasy year a 'bomb cyclone' hit off of Cape Mendocino, it was supposed to hit off of Eureka, Ca., if it had we would have seen what they experienced at the Cape which was average waves of 33 feet high with waves getting over 50 feet high. A storm like that would have crushed Buhne Point and the vault would already be in the bay.

PLEASE, we are living with a bomb that'll destroy this area and we will NEVER be able to fix it once the unimaginable happens. For the Love of God and Country, PLEASE, PLEASE, PLEASE look into this matter while we can still do something to prevent it. I have all of this information in a binder that I would like to submit to you.

Loni

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From: Kendra Holt
Sent: Sunday, February 27, 2022 4:58 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Kendra Holt



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From: HOPPES Alexander (ORANO)
Sent: Friday, March 4, 2022 1:18 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: DOE RFI on Consent Based Siting Process.Orano USA.Final.pdf

Please find Orano USA response attached.

Alec

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Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities

March 4, 2022

RFI on Using a Consent-
Based Siting Process to
Identify Federal Interim
Storage Facilities

03/04/2022

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1. Introduction

In December 2021, the U.S Department of Energy (DOE or the Department) issued an RFI on “Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities”. This document provides the response from Orano USA (Orano).

Orano’s corporate mission is to develop and deliver know-how in the transformation and control of nuclear materials for the climate, supporting a healthy and resource-efficient world, for now and tomorrow. To achieve this mission, Orano’s operations are organized around maximizing the value of nuclear energy and delivering the full value from nuclear materials. As one of the only commercial firms integrated throughout the entire fuel cycle, Orano has the technical expertise to efficiently plan for and support all aspects of the nuclear supply chain, including storage, transportation and logistics.

Orano is engaged across a range of commercial activities related to the safe management of nuclear materials in the United States, including direct support for elements of the Department of Energy’s (DOE) Environmental Management mission. Spent nuclear fuel and HLW are presently managed in multiple forms across multiple communities and states. The defining commonality of these materials is their ultimate destination in a geologic repository. As such, the availability of a geologic repository is foundational for the success of a well-functioning integrated waste management system. The DOE is uniquely responsible for ensuring availability of a Federal repository. This is an inherently governmental, transgenerational capability.

Orano has conducted extensive economic analysis supporting the benefits of a commercial consolidated interim storage model. The consolidation of shutdown commercial reactor fuel can save the U.S. taxpayer billions of dollars while the DOE dutifully progresses with the establishment of a national facility for ultimate disposal.

We appreciate the DOE’s efforts to engage in a dialogue to define the elements of durable consent within an integrated waste management framework. We offer the following applicable perspectives and recommendations, grouped by the topic areas identified in the Department’s Request for Information.

2. Responses to Information Requested

Input was requested on information the Department across three key topic areas, which are addressed below.

Area 1: Consent-Based Siting Process

Orano owns and operates industrial nuclear fuel cycle related facilities across the world. This perspective as an operator informs how we engage with communities and governments to ensure our operations deliver sustainable, positive impacts in our communities and throughout the world. This engagement is defined in our corporate values and social responsibility charters, and supported by transparent environmental monitoring and metrics. Orano facilities are strongly integrated with and supported by the communities in which we operate.

There is a range of material in the United States awaiting the availability of a Federal repository. This includes legacy Cold War materials and defense waste streams under the DOE's current management, along with used nuclear fuel at commercial reactor sites managed by commercial titleholders to the DOE Standard Contract. The requirements and responsibilities for these various waste streams correspond to the classification of material and its origin.

As it has for decades, commercial used nuclear fuel continues to be safely managed by private industry in both wet and dry storage, supported by commercially available technologies and services, none of which are inherently governmental in nature. For reasons noted by the Blue Ribbon Commission and supported by our own analysis, the availability of consolidated interim storage capabilities can serve as a key element of an integrated waste management system, particularly for commercial used nuclear fuel, and especially for inventories at shutdown reactor sites.

Across all Federally-owned and operated facilities and related siting processes, the DOE must engage fairly, justly, and with transparency. The nature of a Federal facility's mission should inform the structure of any agreements or operating conditions that may be necessary to operate that facility. Assignment of responsibilities and expectations within these agreements must be flexible and matched to siting conditions, recognizing that facilities for managed storage pending disposal do not introduce the same intergenerational obligations inherent to a geologic repository facility.

Any siting processes associated with a Federally-owned and operated facility must be accessible to affected units of government, including local, State, and Tribal representatives. DOE should ensure that sufficient technical resources are available for these entities to reach independent conclusions related to the benefits and risks of a potential Federal facility's mission.

As the Department explores its role in delivering a framework for integrated waste management, it should recognize that the lack of a credible program for a repository will fundamentally challenge the ability to reach informed, durable consent for the management of material in storage.

Area 2: Barriers to Meaningful Participation

The lack of financial and technical resources available to communities could be a barrier to meaningful participation in the process for the siting Federally-owned

and operated integrated waste management facilities, particularly a national repository. Communities desire access to sufficient information in order to appropriately inform their participation in the process. Interested communities should not be expected to shoulder the financial burden of this participation.

The Department should budget for, and ensure accessibility to, resources through broadly-available grant programs that can serve to inform local, State, and Tribal governments, along with interested communities. This effort should leverage existing avenues where possible, including the provision of resources through DOE University programs and partnerships with the U.S. National Laboratories.

Additionally, the Department should facilitate and sponsor fact-finding opportunities for interested communities and government leaders to interact and learn from peer organizations in the United States and internationally. There is a significant record of experience that communities and governments can draw upon to better understand the social, economic, and governance factors that have contributed to the successful siting and operation of existing nuclear facilities.

Area 3: Interim Storage as Part of a Waste Management System

Generally, it is evident the Nuclear Waste Policy Act as amended in 1987 has not functioned as policymakers designed. This contributes to an atmosphere of diminished trust in the communities where nuclear materials continue to be stored as deadlines are missed and commitments become less credible.

To deliver a durable consent framework, the DOE must be a consistent and credible negotiating partner, fully empowered to deliver on future commitments. As recognized by the Blue Ribbon Commission, the responsibility for implementation of a multi-generational program might not be best served in an institution subject to leadership change on a continuing basis with funding subject to the decisions of a separate institution also subject to continuing change. These are core issues requiring resolution.

As noted previously, the lack of a credible repository program continues to undermine the confidence of communities and contractual counterparties in the process. To this end, and consistent with parameters of the Nuclear Waste Policy Act, Orano recommends the DOE focus efforts on reaching a durable, consent-based framework for a repository(s), while supporting commercial efforts to develop value-generating platforms for the interim management of material pending disposal.

The development and availability of new facilities and capabilities will be essential to increasing long-term operational flexibility for the DOE, and driving down long-term costs for the taxpayer. The DOE is positioned to support both commercial and DOE storage platforms, and to enable a range of potential benefits to host communities associated with facility development, including the potential expansion of opportunities through co-located technologies and associated R&D while the DOE makes progress on a national repository. Because much of what is currently categorized as “waste” contains material that could be recovered and utilized, the DOE should prioritize evaluation of technologies that can recover and extend these resources prior to disposal. Finally, DOE’s programmatic, facility,

and R&D mission requirements should all be informed by an urgency to deploy new nuclear generation to address emergent challenges of the 21st Century. DOE's efforts in this area are laudable, and should continue in the U.S. and internationally, supported by an 21st Century framework for integrated waste management.

3. Contact Information

Orano USA, a U.S. subsidiary of Orano, is a leading supplier of nuclear fuel materials, nuclear materials transportation, used nuclear fuel management, and decommissioning, decontamination, and radwaste treatment solutions to U.S. commercial and federal customers.

Orano USA's Interim Storage Partners Joint Venture was issued a license by the Nuclear Regulatory Commission in September 2021 for construction and operation of a commercial consolidated storage facility.

Orano USA, through its subsidiary Orano Med in Texas, is developing nuclear medicine cancer treatments using targeted radio-immunotherapy, with its first drug undergoing FDA-authorized clinical trials.

Orano USA, 4747 Bethesda Ave., Suite 1001, Bethesda, Maryland, 20814. <https://www.orano.group/usa>, @Orano_usa

From: Natalie Houghtalen
Sent: Friday, March 4, 2022 11:56 AM
To: Consent Based Siting
CC: Nicholas McMurray
Subject: [EXTERNAL] ClearPath Response to Consent-Based Siting RFI
Attachments: 220304 Concent Based Siting RFI_Final.pdf

Good afternoon,

See attached ClearPath's response to the DOE consent-based siting RFI.

Thank you,
NatalieH

--
Natalie Houghtalen
ClearPath | Policy Analyst


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CLEARPATH



ClearPath Response to the Department of Energy Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities

RFI/NOI title and reference number:

Request for Information (RFI) on Using a Consent-Based Siting Process to Identify
Federal Interim Storage Facilities
DOE-HQ-2021-0032

DOE Contact:

consentbasedsiting@hq.doe.gov

Name, phone number, and e-mail address for the principal point of contact:

Natalie Houghtalen
Policy Analyst



Institution or organization affiliation, postal address, e-mail address, and phone number:

ClearPath



info@clearpath.org

Introduction:

ClearPath appreciates the opportunity to provide a response to the Department of Energy (DOE) RFI # DOE-HQ-2021-0032. ClearPath's mission is to develop and advance policies that accelerate breakthrough innovations to reduce emissions in the energy and industrial sectors. An entrepreneurial 501(c)(3) nonprofit, ClearPath collaborates with public and private sector stakeholders on nuclear energy, carbon capture, natural gas, hydropower, geothermal, energy storage, hydrogen, and heavy industry to enable private-sector deployment of critical technologies.

ClearPath complements efforts by DOE to advance a spent fuel solution. Nuclear energy is an important tool in the toolbox to reduce carbon emissions. A functional spent fuel management strategy is necessary to enable the deployment of new advanced reactor technologies. A consent-based strategy for spent fuel management could accelerate the deployment of projects and ensure their longevity.

Responses:

Area 1: Consent-Based Siting Process

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

- Consent is essential to the long term success of these projects; a spent fuel solution will not only require time to license and build, but will also have a long operating life. There should be a reasonable expectation that the host community retains an adequate level of consent throughout the duration of the project.

However, perfect should not get in the way of good. DOE must take a thoughtful approach and set reasonable expectations for the degree of necessary consent.

There are many types of stakeholders, and even non-stakeholders, that will wish to participate in the process. The degree of allowed involvement in the process, and the weight of significance given to the stakeholder feedback, should be scaled.

When receiving feedback, there should also be an additional consideration given to thoughtfulness. For example, a form letter should not get the same consideration as meaningful, constructive comments. The loudest voices should not overshadow the constructive ones; this process is not an airing of grievances, it is a process that seeks to establish spent fuel solutions, something that is important for the future of advanced nuclear energy. Without a larger share of nuclear power — from both existing and advanced reactors — the Administration's emission reduction goals are less likely to succeed and will certainly be more expensive.

An additional stakeholder pool to consider are the communities that the spent fuel will be transported through on the way to the interim facility. DOE should anticipate pushback in these communities from both the citizens and the local government.

Local governments may attempt to use legal measures to slow project progress. DOE should consider how to interact with those communities.

There must be some mechanism to give the communities surrounding a project the ultimate say. Hosting a spent fuel facility is a local decision, and higher level elected officials are unlikely to approve projects if it would affect their future electability. There needs to be a public-driven override to correct this mis-match of incentives. This is a new concept with many potential avenues; a consent-focused DOE would be the best entity to pursue this further.

Area 2: Removing Barriers to Meaningful Participation

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

- The DOE should continue the tradition of giving communities interested in hosting consent based storage sites enough support to meaningfully participate in the process. Resources should be provided by considering what has been done traditionally and adjusting that to make necessary improvements.

Area 3: Interim Storage as Part of a Waste Management System

4. What other issues should the Department consider in developing a waste management system?

- Any renewed interest from the DOE in pursuing a waste solution is appreciated; however, a new, *federal* interim storage facility is potentially the most difficult and furthest away option possible for interim storage. There are alternatives to new construction that DOE should also consider pursuing:
 - **Pay private interim storage facilities to house DOE owned spent fuel.** There are two private interim storage facilities that will be completed in the near future. In order to reduce tax payer liability in the short term, DOE should consider taking ownership of spent fuel and transferring it to these facilities. There is some confusion surrounding the ability of DOE to pay a private facility for spent fuel storage; a legal determination would solve this problem. The Secretary of Energy should ask the Attorney General to clarify the legality of this option.
 - **Use existing storage capacity at nuclear power plants to consolidate spent fuel within a state.** Interim storage, as it is defined in the Nuclear Waste Policy Act of 1982 (NWPA), is the temporary storage capacity on the nuclear power plant (NPP) site. In addition, what is commonly called “interim storage” today was called “monitored retrievable storage” in NWPA. DOE could take ownership of the spent fuel storage area at a NPP (either operating or decommissioned) and use the existing infrastructure to consolidate the spent fuel from surrounding NPPs. A consent-based process should still be used then choosing the NPPs that will host the spent fuel. This is a non-conventional

approach to interim storage, but there are many reasons the idea is worth considering:

- The state that benefited from the clean nuclear energy, jobs, and tax revenue would be responsible for its own spent fuel. This would address a principle equity complaint that the states accommodating the spent fuel are removed from the benefits of nuclear power.
 - The storage site has already undergone extensive characterization and regulatory review and has the necessary infrastructure.
 - Starting a spent fuel transfer program creates a demand side signal to build a qualified workforce and establish a supply chain.
 - A spent fuel transfer program would allow the public to see examples of the successful transport of nuclear waste. While this is done routinely today, publicizing program success could reduce public concern and enable further solutions.
 - Reducing the number of host communities reduces overall taxpayer liability.
 - Removing spent fuel frees communities with decommissioned NPPs to reuse that land.
- There must be a deployment-focused office within the Office of Nuclear Energy (NE) that is tasked with taking action toward a spent fuel solution. The Office of Civilian Radioactive Waste Management (OCRWM), which was the deployment oriented office, was dissolved after funding was discontinued for the Yucca Mountain project. This office should have an advisory board of varied stakeholders and coordinate with the Office of Spent Fuel & Waste Science and Technology (SFWST) and the Office Integrated of Waste Management (IWM).

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

- If the interim storage facility was a consolidated storage facility at an existing NPP (either operating or decommissioned), it would not statutorily require progress on a final waste solution and would likely have a better public reception than a new facility. As for a permanent solution, in the time this program is implemented, DOE can accelerate work on innovative solutions that not only reduce the quantity of fuel that needs to be stored, like reprocessing/recycling, but also on how to store spent fuel and high level waste permanently in a less invasive way, like utilizing deep borehole disposal.

From: Angela Howe
Sent: Friday, March 4, 2022 9:54 AM
To: Consent Based Siting
CC: Katie Day; Mandy Sackett
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage, Docket Number DOE-HQ-2021-0032
Attachments: Surfrider Foundation.Consent-Based Siting comments 3.4.22.docx; Surfrider Foundation.Consent-Based Siting comments 3.4.22.pdf

Dear Department of Energy Representatives,

Please find attached Consent-Based Siting and Federal Interim Storage comments to Request for Information Docket No. DOE-HQ-2021-0032 from The Surfrider Foundation. Both PDF and Word versions of the comments are attached for your convenience.

Sincerely,
Angela T. Howe, Esq.
Senior Legal Director
Surfrider Foundation

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

March 4, 2022

Dr. Kathryn Huff
Principal Deputy Assistant Secretary for the Office of Nuclear Energy
U.S. Department of Energy
Office of Spent Fuel and Waste Disposition
Office of Nuclear Energy
ATTN: DOE-HQ-2021-0032
1000 Independence Ave, SW
Washington, D.C. 20585
Via email to consentbasedsiting@hq.doe.gov

RE: RFI for Consent-Based Siting and Federal Interim Storage, *Docket Number DOE-HQ-2021-0032*

Dear Dr. Huff,

The Surfrider Foundation submits these comments to the U.S. Department of Energy (DOE) in regards to Request for Information (“RFI”) on the consent-based siting of high level radioactive waste, referred to as spent nuclear fuel (“SNF”), interim storage sites, Docket Number DOE-HQ-2021-0032.

The Surfrider Foundation (“Surfrider”) is a grassroots nonprofit environmental organization dedicated to the protection and enjoyment of the ocean, waves, and beaches for all people. Surfrider’s efforts include enhancing public beach access, ocean protection, coastal preservation, climate change action, plastic pollution prevention and beach water quality. We submit these comments on behalf of our 80 chapters and 118 student clubs, including chapters in the Great Lakes, Northeast, Mid-Atlantic, Southeast, Gulf Coast and West Coast regions, in addition to more than 500,000 supporters and members in the United States.

Generally, consent-based siting must include meaningful partnerships and open communication amongst all interested parties, with special concerted efforts to reach out to environmental justice communities. Affected states, localities and Tribes should have meaningful regulatory authority regarding the maintenance, transportation and storage of spent nuclear fuel within their boundaries. These parties should be engaged in meaningful consultations regarding consent for the disposal of spent nuclear fuel inside of or in close proximity to their communities.

According to the Blue Ribbon Commission on America’s Nuclear Future, rather than attempting to cite the storage and disposal of SNF over the objections of host jurisdictions, success is more likely to result from a consent-based process that gives all levels of government a meaningful and consultative role throughout the entire process. A “meaningful role” should include direct authority over aspects of planning, regulation, permitting, operations, and oversight in a way that is helpful in protecting the interests and gaining the confidence of affected communities and

citizens. A successful consent-based siting process and framework will achieve consent for future storage and disposal sites, including agency mandates for accountability and enforcement. Surfrider offers the following recommendations and approaches in regards to specific questions outlined in the RFI. Thank you for your attention to these important considerations.

Area 1: Consent-Based Siting Process

- **How should the Department build considerations of social equity and environmental justice into a consent-based siting process?**

Surfrider strongly recommends that the Department seek out and discuss social equity and environmental justice considerations directly with impacted communities, including environmental justice communities, low-income communities, communities of color, and other impacted communities. Environmental justice (“EJ”) communities have a long history of marginalization and frustration with government agencies that thwart their basic rights and protection for a clean, uncontaminated environment. Through past exclusion from important decision-making processes, EJ communities sometimes have grown a mistrust of public agencies, officials and processes. Unfortunately, the existing mistrust in these communities may mean that additional efforts are needed to reach out and engage all community members in the consent-based siting process.

To accomplish meaningful engagement with EJ communities, there is a critical need to communicate consistently, clearly and appropriately with EJ groups and underserved communities. Language justice requires that relevant materials be translated into languages that are used by underserved and minority populations within a community. The agency should reach out to EJ communities early and often in the process with accessible, understandable communications. For example, we recommend reaching out to the following EJ and underserved community organizations that likely have interest in the issue: Intersectional Environmentalist, Council for Exceptional Children, Physicians for Social Responsibility - Los Angeles, Southwest Research and Information Center, as well as Tribal Nations and public school systems. We also encourage the use of non-traditional communication mediums, like flyers, social media, surveys and, of course, well-publicized community meetings and town halls. The agency should consider the use of focus groups and appointed stakeholder representatives, where EJ community members are compensated for their time.

Comprehensive outreach and coordination, focusing on EJ communities, will ensure that activities are informed in meeting the needs of all community members, speak to a variety of cultural requirements and seek to remove any institutional barriers and biases in the process. The process should also include diverse representatives who identify as being part of an underserved community on stakeholder advisory bodies. Hearing directly from impacted individuals and communities is absolutely the most inclusive and effective route. The agency should also partner with Tribal Nations, which are the traditional custodians of public lands on public outreach and events, and foster partnerships and programs with EJ partners and other nongovernmental organizations (“NGOs”) that support and work with underserved communities.

Finally, environmental justice communities should be fully apprised of all the potential risks and “community benefits” offered with the siting and transportation of a SNF project. This includes potential increased traffic congestion, radiation exposure, or other hazards shared by independent nuclear and public health experts. Regarding benefits, explicit information required would be the amount of funding, jobs, amenities, and other benefits that will come with the project, including the timing and economic valuation of the community benefits. The early and complete sharing of information will allow for a fair evaluation of the project by all community stakeholders. EJ communities should have significant influence over the planning and siting process, so as to foster consent for any siting decisions.

- **What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?**

Impacted communities, burdened with the storage or transport of spent nuclear fuel, should have say-so in how, when, and if the siting takes place. Consent-based siting, with meaningful partnerships and open communication among federal, state, local and Tribal leaders, is a critical step toward establishing SNF interim storage and final disposal. Surfrider recommends that Tribal, state and local governments have veto power if not aligned with the plan for interim storage siting. Surfrider also recommends that no Consolidated Interim Storage (“CIS”) be finalized and approved without a plan for final storage and disposal of that same spent nuclear fuel. This assurance will help guarantee that an interim storage location does not become a de facto permanent storage location, thereby undermining community consent.

Affected states and Native American tribes must have meaningful regulatory authority in the planning, maintenance, transportation, storage and disposal of spent nuclear fuel within their boundaries. The current siting of spent nuclear fuel at decommissioned nuclear power plants for an indefinite amount of time is a lamentable situation that should be avoided in the future, if at all possible. Currently, affected states, tribes, and communities are not consenting to the disposal of the SNF current location and storage sites. The decommissioned sites are inadequately built, ill-prepared and insufficiently protective of affected communities because they were not built for long-term or permanent disposal.

In working with Tribal Nations, the agency should respectfully acknowledge the painful history of Native American Tribes, including the land and lives lost, at the hands of the American government; and honor tribes’ efforts to rebuild thriving living cultures based on traditional knowledge, languages and practices. Tribal Nations are valuable and respected contributors to management of our coastlines and open space. Working collaboratively with tribes can help the consent-based siting process in the understanding of local and regional environmental resources and concerns.

- **What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?**

Surfrider recommends asking this question directly to local, State and Tribal governments.

- **What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?**

One difficulty of using a consent-based process is the multiplicity of views and priorities amongst the groups. Some tribal and U.S. governmental entities may overlap with one another (e.g. both be affected for transport or siting of spent nuclear fuel) but may not agree on whether and how it should be transported/sited. The parties may not agree on the terms of SNF storage and disposal, as well, including mitigation terms.

Importantly, local governments and even states may not adequately consider the viewpoints of stakeholders on the matter. For instance, environmental and EJ groups are not directly represented in the consent-based siting process, but are important stakeholders to protect environmental resources now and in the future. Depending on the political winds of the moment, certain minority and/or historically under-served voices may not have their will reflected in the decision-making.

There is also a temporal problem for consent-based siting with an electoral democracy. Once consent is reached at the state level, the local level may change their minds to reject a siting decision, for instance. By the time the local level changes its mind for acceptance, there may be different state politicians who reject the siting decision that was made by predecessors, perhaps of a different political party.

- **How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?**

Local outreach, information-sharing and stakeholder engagement is critical. Engaged communities and knowledgeable community members often bring important considerations to light during the stakeholder outreach and engagement process. This process should make use of community meetings (in person and/or virtual), presentations and discussions with decision-makers, as well as experts, technicians and scientists who are helping to inform the process. Third-party, independent consultants may help foster collaboration with communities and enable capacity when employed over longer terms sufficient to build relationships throughout the planning process. Skilled meeting mediators in community meeting facilitation and conflict resolution can help ensure voices are adequately captured and represented at meetings. Information should be shared on a regular basis via a non-partisan website, community mailers, notifications in the local and regional newspaper, radio and online or television news channels and available in multiple languages. Engaged residents, community members and other stakeholders should be able to easily sign up for an email list to receive regular updates on the process.

Care should be taken to ensure accessible community meetings and opportunity for engagement. Meetings in a virtual format should allow video *and* phone participation with ample support available and time built into meeting agendas to ensure public participation as well as translators and live translation available for non-English speakers. Every effort should be made to overcome a “digital divide” that is inherently unfair.

Communities should be given the opportunity to engage and influence decisions on interim storage facilities during the initial permitting stages and throughout the life of the storage facility. Initial permits should build in opportunities for ongoing adaptive management and community engagement over time and a clear permit expiration after a specific duration, which will trigger a new public engagement process for removal or permit renewal.

- **What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?**

In addition to Tribal communities and other affected local groups, DOE should proactively reach out to EJ groups, environmental non-governmental organizations, global experts on nuclear waste and counterparts in other countries.

Area 2: Removing Barriers to Meaningful Participation

- **What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?**

Surfrider recommends asking this question directly to local, State and Tribal governments.

- **What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?**

In addition to the answers stated above in the Area 1, Q5, DOE should ensure that local communities, especially residents and community members living, working and going to school in the areas nearby storage sites, are proactively reached out to and consulted through in-person, phone and/or online interviews.

- **How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?**

Outreach and solicitation of feedback on specific topics, with detailed questions and an array of topics, is recommended. In terms of collaboration with interested communities, DOE should openly accept recommendations and information, and then demonstrate how it is utilized and incorporated in decision-making.

- **How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?**

In addition to the answers stated above in the Area 1, Q5, and Area 2, Q2, effective engagement entails not only DOE speaking with individual stakeholders, but intra-stakeholder discussion as well. There must be a forum for discussion of ideas amongst all parties, including environmental non-governmental organizations, in an open, inviting and safe atmosphere.

- **What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?**

Open communication and transparency in information-sharing is a paramount concern for impacted communities and for all stakeholders to align with the decisions made during the siting process. There is a stark need for environmental analysis at the local, state and federal levels, with environmental documents shared and commented upon by the public. All potential harms, including critical public health information, should be openly shared and discussed. This includes the risk of any public harm through planned storage, and the risks associated with a spill or explosion. As stated above, the community benefits should be fully disclosed and evaluated. Additionally, a proposed timeline and cost analysis should be disclosed.

Area 3: Interim Storage as Part of a Waste Management System

- **How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?**

Social equity demands full stakeholder engagement and transparency of information provided for the public. Special effort should be made to engage EJ communities in a method that is understandable and relatable to those communities. Additionally, consolidated interim storage, in and of itself, has serious EJ concerns since an interim storage solution can turn into a de facto permanent storage site without a plan and guarantees for a final disposal location. In accomplishing consent-based siting, DOE must plan for the end of life disposal of SNF. By securing a location for the entire lifespan of the spent nuclear waste, instead of focusing on interim measures, we ensure that the waste will not unduly burden a CIS community with longer and indefinite storage responsibility.

- **What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?**

Surfrider Foundation does not have a stance on the general co-location of multiple facilities. However, we do strongly advocate that all state and federal environmental laws apply to the siting and management of waste, including any proposed combined facilities. In fact, there is new federal legislation, the Nuclear Waste Task Force Act (H.R. 5401, S. 2871) that would establish a task force of federal agencies, states, tribes and other stakeholders to analyze the implications of removing the problematic exemptions that allow for environmental laws to be obviated during consent-based siting of geologic repositories. This move could help states, tribes and other stakeholders decide if and how much waste they would like to accept. By performing this necessary environmental review and analysis under relevant environmental laws, decision-makers will be more empowered and knowledgeable to make wise decisions. They will be better positioned to represent their constituents and surrounding communities. The task force in the proposed federal law is designed to enable broad inclusion of all interested parties, host open hearings and draft a report that is open for public comment. This will allow broad consent-

based siting process opportunities in the effort to find a final location for the disposal of nuclear waste.

- **To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?**

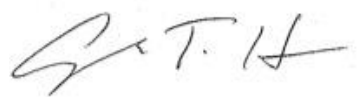
An interim storage facility should not be utilized unless and until DOE has located and secured a final resting place for the spent nuclear waste. One solution is not guaranteed without the other; a final permanent repository must be sited and secured in order to ensure that the interim storage facility is truly just a temporary and interim measure, and not a de facto permanent facility. The nation is currently in a woeful era of mismanagement of spent nuclear fuel due to the failure to plan and secure permanent storage of the spent nuclear fuel that is now piling up in “temporary” locations throughout the nation.

- **What other issues should the Department consider in developing a waste management system?**

The urgency of addressing spent nuclear waste throughout the U.S. cannot be overstated. Not only is engaging in a consent-based siting process a moral imperative, it will also expedite the designation process. Community opposition would hinder and slow permit approvals and is indicative of environmental or social hazards, which is why a consent based process is necessary. We strongly urge the Department to move swiftly toward initiating this important part of developing an interim storage facility because most of the 80+ nuclear facilities throughout the U.S. have spent fuel in precarious locations that should be removed as early as possible but do not currently have an identified interim or long term storage site. For example, the San Onofre Nuclear Generating Station (SONGS) is currently holding 3.6 million pounds of SNF, approximately two percent of the national total, in a highly precarious location. The site is nestled between a popular and valuable beach recreation location, an active federal highway thoroughfare servicing hundreds of thousands of people per day, and the encroaching coastline already experiencing severe erosion, sea level rise and added risk from multiple faults. Additionally, over 9 million people reside in the vicinity. This and many other current high-risk, unplanned interim storage locations of stranded nuclear fuel are simply not an option for long term storage.

Thank you for your consideration of our above recommendations. Additionally, thank you for your acknowledgement of the importance of immediate and careful action to find alternative, geologically-stable and consent-based locations for our nation’s SNF.

Sincerely,



Angela T. Howe, Esq.
Senior Legal Director
Surfrider Foundation



Mandy Sackett
California Policy Coordinator
Surfrider Foundation

A handwritten signature in black ink that reads "Katie Day". The signature is written in a cursive style with a large, stylized "K" and "D".

Katie Day
Environmental Science and Policy Manager
Surfrider Foundation



March 4, 2022

Dr. Kathryn Huff
Principal Deputy Assistant Secretary for the Office of Nuclear Energy
U.S. Department of Energy
Office of Spent Fuel and Waste Disposition
Office of Nuclear Energy
ATTN: DOE-HQ-2021-0032
1000 Independence Ave, SW
Washington, D.C. 20585
Via email to consentbasedsiting@hq.doe.gov

RE: RFI for Consent-Based Siting and Federal Interim Storage, *Docket Number DOE-HQ-2021-0032*

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One difficulty of using a consent-based process is the multiplicity of views and priorities amongst the groups. Some tribal and U.S. governmental entities may overlap with one another (e.g. both be affected for transport or siting of spent nuclear fuel) but may not agree on whether and how it should be transported/sited. The parties may not agree on the terms of SNF storage and disposal, as well, including mitigation terms.

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There is also a temporal problem for consent-based siting with an electoral democracy. Once consent is reached at the state level, the local level may change their minds to reject a siting decision, for instance. By the time the local level changes its mind for acceptance, there may be different state politicians who reject the siting decision that was made by predecessors, perhaps of a different political party.

- **How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?**

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In addition to Tribal communities and other affected local groups, DOE should proactively reach out to EJ groups, environmental non-governmental organizations, global experts on nuclear waste and counterparts in other countries.

Area 2: Removing Barriers to Meaningful Participation

- **What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?**

Surfrider recommends asking this question directly to local, State and Tribal governments.

- **What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?**

In addition to the answers stated above in the Area 1, Q5, DOE should ensure that local communities, especially residents and community members living, working and going to school in the areas nearby storage sites, are proactively reached out to and consulted through in-person, phone and/or online interviews.

- **How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?**

Outreach and solicitation of feedback on specific topics, with detailed questions and an array of topics, is recommended. In terms of collaboration with interested communities, DOE should openly accept recommendations and information, and then demonstrate how it is utilized and incorporated in decision-making.

- **How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?**

In addition to the answers stated above in the Area 1, Q5, and Area 2, Q2, effective engagement entails not only DOE speaking with individual stakeholders, but intra-stakeholder discussion as well. There must be a forum for discussion of ideas amongst all parties, including environmental non-governmental organizations, in an open, inviting and safe atmosphere.

- **What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?**

Open communication and transparency in information-sharing is a paramount concern for impacted communities and for all stakeholders to align with the decisions made during the siting process. There is a stark need for environmental analysis at the local, state and federal levels, with environmental documents shared and commented upon by the public. All potential harms, including critical public health information, should be openly shared and discussed. This includes the risk of any public harm through planned storage, and the risks associated with a spill or explosion. As stated above, the community benefits should be fully disclosed and evaluated. Additionally, a proposed timeline and cost analysis should be disclosed.

Area 3: Interim Storage as Part of a Waste Management System

- **How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?**

Social equity demands full stakeholder engagement and transparency of information provided for the public. Special effort should be made to engage EJ communities in a method that is understandable and relatable to those communities. Additionally, consolidated interim storage, in and of itself, has serious EJ concerns since an interim storage solution can turn into a de facto permanent storage site without a plan and guarantees for a final disposal location. In accomplishing consent-based siting, DOE must plan for the end of life disposal of SNF. By securing a location for the entire lifespan of the spent nuclear waste, instead of focusing on interim measures, we ensure that the waste will not unduly burden a CIS community with longer and indefinite storage responsibility.

- **What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?**

Surfrider Foundation does not have a stance on the general co-location of multiple facilities. However, we do strongly advocate that all state and federal environmental laws apply to the siting and management of waste, including any proposed combined facilities. In fact, there is new federal legislation, the Nuclear Waste Task Force Act (H.R. 5401, S. 2871) that would establish a task force of federal agencies, states, tribes and other stakeholders to analyze the implications of removing the problematic exemptions that allow for environmental laws to be obviated during consent-based siting of geologic repositories. This move could help states, tribes and other stakeholders decide if and how much waste they would like to accept. By performing this necessary environmental review and analysis under relevant environmental laws, decision-makers will be more empowered and knowledgeable to make wise decisions. They will be better positioned to represent their constituents and surrounding communities. The task force in the proposed federal law is designed to enable broad inclusion of all interested parties, host open hearings and draft a report that is open for public comment. This will allow broad consent-

based siting process opportunities in the effort to find a final location for the disposal of nuclear waste.

- **To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?**

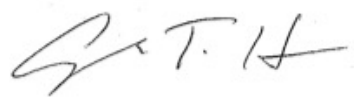
An interim storage facility should not be utilized unless and until DOE has located and secured a final resting place for the spent nuclear waste. One solution is not guaranteed without the other; a final permanent repository must be sited and secured in order to ensure that the interim storage facility is truly just a temporary and interim measure, and not a de facto permanent facility. The nation is currently in a woeful era of mismanagement of spent nuclear fuel due to the failure to plan and secure permanent storage of the spent nuclear fuel that is now piling up in “temporary” locations throughout the nation.

- **What other issues should the Department consider in developing a waste management system?**

The urgency of addressing spent nuclear waste throughout the U.S. cannot be overstated. Not only is engaging in a consent-based siting process a moral imperative, it will also expedite the designation process. Community opposition would hinder and slow permit approvals and is indicative of environmental or social hazards, which is why a consent based process is necessary. We strongly urge the Department to move swiftly toward initiating this important part of developing an interim storage facility because most of the 80+ nuclear facilities throughout the U.S. have spent fuel in precarious locations that should be removed as early as possible but do not currently have an identified interim or long term storage site. For example, the San Onofre Nuclear Generating Station (SONGS) is currently holding 3.6 million pounds of SNF, approximately two percent of the national total, in a highly precarious location. The site is nestled between a popular and valuable beach recreation location, an active federal highway thoroughfare servicing hundreds of thousands of people per day, and the encroaching coastline already experiencing severe erosion, sea level rise and added risk from multiple faults. Additionally, over 9 million people reside in the vicinity. This and many other current high-risk, unplanned interim storage locations of stranded nuclear fuel are simply not an option for long term storage.

Thank you for your consideration of our above recommendations. Additionally, thank you for your acknowledgement of the importance of immediate and careful action to find alternative, geologically-stable and consent-based locations for our nation’s SNF.

Sincerely,



Angela T. Howe, Esq.
Senior Legal Director
Surfrider Foundation



Mandy Sackett
California Policy Coordinator
Surfrider Foundation

A handwritten signature in black ink that reads "Katie Day". The signature is written in a cursive style with a large, stylized "K" and "D".

Katie Day
Environmental Science and Policy Manager
Surfrider Foundation

From: Michael Iltis
Sent: Friday, February 25, 2022 11:51 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Michael Iltis

[REDACTED]

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

From: Greg Jaczko
Sent: Saturday, March 5, 2022 5:37 AM
To: Consent Based Siting
CC: Len Hering ADMIRAL
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage.
Attachments: DOE RFI.zip

Please find comments attached in a compressed zip file.

Cheers
Greg

--

Gregory Jaczko, PhD

[REDACTED]

This message does not originate from a known Department of Energy email system.
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March 4, 2022

Dr. Kathryn Huff
Principal Deputy Assistant Secretary for the Office of Nuclear Energy
U.S. Department of Energy
1000 Independence Ave SW,
Washington, DC 20585

Dear Dr. Huff,

On behalf of the members of the San Onofre Nuclear Generating Station Task Force, we transmit comments of the task force in response to the “Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities” published on December 1, 2021.

Congressman Michael T. Levin created the task force in January 2019 to address the safety challenges at the San Onofre Nuclear Generating Station (SONGS) and to drive solutions for sensitive waste located at SONGS. The task force identified weaknesses in the current approach to the safety of spent nuclear fuel at SONGS. These findings address failures or legal limitations in the industrial, state and federal organizations responsible for safety. In addition, the task force recognized that the lack of a long-term disposal option creates specific challenges for the reactor storage of spent fuel, a finding particularly relevant to the RFI.

We developed 30 recommendations based on 29 findings related to the challenge of dealing with spent nuclear fuel from the San Onofre Nuclear Generating Station outside San Diego, California. From the findings, the task force developed recommendations for government policy makers, government regulators, and industry participants. These recommendations guide Congress, state and federal authorities to improve the safety of fuel at SONGS and the overall national program for ensuring the long-term safety of spent nuclear fuel.

We attach comments to the RFI from findings and recommendations relevant to consent based siting of nuclear waste disposal sites and a copy of the task force report. The Task Force, however, did not agree on the need for a consolidated interim storage facility. The Task Force did agree that the San Onofre spent fuel storage installation should not become either an authorized or de facto spent fuel storage facility.

Sincerely,

/S/

Rear Admiral Leendert R. "Len" Hering,
Sr., USN, Retired

/S/

The Honorable Gregory B. Jaczko,
former Chairman of the U.S. Nuclear
Regulatory Commission

Comments of San Onofre Nuclear Generation Task Force

We offer the following comments from the 2020 San Onofre Nuclear Generating Station Task Force report.

General Comment

The task force did not agree on the need for a consolidated interim storage facility. The task force did agree, however, that the San Onofre Nuclear Generating Site (SONGS) should not be an interim storage site. Furthermore, the task force stated that SONGS is “an inadequate location for the storage of [Spent Nuclear Fuel].”¹

Report Findings Relevant to Any Spent Nuclear Fuel Facility

- **Consent-based siting, with meaningful partnerships and open communication among federal, state, local, and tribal leaders, is a critical step toward establishing a permanent Spent Nuclear Fuel (SNF) repository. (Finding D)**
- **Lack of an effective timeline and metrics for SNF has led to stranded SNF throughout the United States. (Finding E)**
- **Environmental review and safeguards for permanent disposal are needed for effective federal regulation of SNF. (Finding F)**
- **State agencies have not sufficiently coordinated efforts on SNF storage permitting. (Finding I)**
- **State agencies have not defined their authority over SNF oversight. (Finding J)**
- **Lack of nuclear industry transparency with stakeholders has led to renewed social and political pressure opposing the storage and disposal of SNF in the U.S. (Finding K)**

¹ San Onofre Nuclear Generating Station Task Force Report, page 7.

Report Recommendations Relevant to Any Spent Fuel Facility

- **Congress should consider federal legislation that creates a framework to achieve consent for future storage and disposal sites. (Recommendation 2)**
- **Congress should consider federal legislation regarding SNF to include mandates for accountability and enforcement. Specifically, the legislation should include nationally agreed upon legislative definitions, timeline requirements, incentives for sites to accept SNF, and viable enforcement mechanisms. (Recommendation 3)**
- **Congress should consider federal legislation to allow for state authority to perform environmental review of the transport, siting, and storage of SNF. (Recommendation 4)**
- **States must be given authority to conduct oversight of SNF storage. (Recommendation 8)**
- **Congress should support the creation of a separate, federal Nuclear Waste Administration to mandate best practices. (Recommendation 11)**
- **Congress should consider legislation to adopt the Blue Ribbon Commission on America's Nuclear Future's recommendation to establish a new facility siting process, establish a new SNF management organization, and broaden support to municipalities affected by transportation routes. (Recommendation 12)**
- **Congress should consider legislation that restricts NRC from approving canisters with a design life of less than 100 years. (Recommendation 13)**

- **Congress should encourage collaboration on best practices between military and civilian SNF handling authorities. (Recommendation 16)**
- **Congress should work with DOE and industry to authorize and develop a program that incentivizes SNF storage innovation through research and development to discover alternate ways to isolate nuclear material from humans and the environment. (Recommendation 17)**
- **The DOE and nuclear power plant owners should reach a consensus on which canister and storage system to use for storage of SNF and apply jointly to the NRC for the license. (Recommendation 20)**
- **Congress should budget adequate funding annually to ensure proper and comprehensive emergency planning measures are in place for all surrounding municipalities to implement for the safety of their residents. (Recommendation 26)**
- **Congress should work towards a consent- based final disposal site including prioritization for sites with higher risk of sea level rise, high population density and high potential for seismic events, including as envisioned under the Spent Fuel Prioritization Act (H.R. 2995). (Recommendation 27)**

An aerial photograph of the San Onofre Nuclear Generating Station, featuring two prominent white containment domes. The station is situated in a valley with a town and hills in the background. The entire image is overlaid with a blue tint.

REPORT OF THE SAN ONOFRE NUCLEAR GENERATING STATION TASK FORCE

2019 - 2020

SAN ONOFRE NUCLEAR GENERATING STATION TASK FORCE

CO-CHAIRS

Rear Admiral Leendert “Len” Hering Sr.,
United States Navy *(Retired)*

Gregory B. Jaczko, former Chairman of the
Nuclear Regulatory Commission

MEMBERS

William Alley, community member-at-large

Taylor Altenbern, Committee to Bridge the Gap

Nina Babiarz, Public Watchdogs

Lisa Bartlett, Supervisor, County of Orange
(only Federal Legislation and Regulatory Oversight)

Ken Berg, community member-at-large

Donna Boston, Orange County Sheriff's
Department

Malcolm Bund, community member-at-large

Dr. Subrata Chakraborty, Visiting Scholar,
University of California, San Diego

Katie Day, The Surfrider Foundation
*(Except State Legislation and Regulatory Oversight and
with Alternative View submitted)*

Daniel Dominguez, community member-at-large
(with Alternative View submitted)

Dr. Tom English, community member-at-large

Dr. Steven Goetsch, community member-at-large

Gary Headrick, San Clemente Green

Rob Howard, community member-at-large

Angela Howe, The Surfrider Foundation
*(Except State Legislation and Regulatory Oversight and
with Alternative View submitted)*

Jerry Kern, Councilmember *(former)*,
City of Oceanside *(only Federal Legislation
and Regulatory Oversight)*

Larry Kramer, community member-at-large

Debra Lewis, Councilmember,
City of Dana Point

Amanda Mascia, Sierra Club San Diego

Bob Mignogna, San Onofre Parks Foundation
(except State Legislation and Regulatory Oversight)

Joe Mosca, Councilmember, City of Encinitas

Dr. Don Mosier, Councilmember *(former)*,
City of Del Mar

Ted Quinn, community member-at-large
(only Federal Legislation and Regulatory Oversight)

Dave Rice, community member-at-large

Esther Sanchez, Councilmember, City of
Oceanside

Cori Schumacher, Councilmember,
City of Carlsbad

Chelsi Sparti, Samuel Lawrence Foundation

Daniel Stetson, community member-at-large
(only Federal Legislation and Regulatory Oversight)

Kathleen Treseder, community member-at-large

Sharon Williams, community member-at-large

David Zito, Councilmember,
City of Solana Beach

LETTER FROM REPRESENTATIVE MIKE LEVIN

MARCH 2020

INTRODUCTION

I am fortunate to represent one of the most beautiful Congressional districts in the United States. While we have many incredible resources, none is more important than our more than 50 miles of coastline. Directly threatening this resource is over 1,600 tons of spent nuclear fuel stored just 100 feet from the Pacific Ocean. This is the legacy of the San Onofre Nuclear Generating Station (SONGS), which stopped producing electricity in 2012. It is also the legacy of failed federal policies to address the storage and disposal of our nation's spent nuclear fuel.

Soon after being sworn into office in January 2019, I convened the SONGS Task Force, which has analyzed the technical and regulatory issues at SONGS and developed a set of policy recommendations. The Task Force has been co-chaired by Greg Jaczko, former Chair of the Nuclear Regulatory Commission (NRC) from 2009 to 2012, and retired Rear Admiral Len Hering. I am extremely grateful to Greg and Len for their leadership and guidance.

We have a growing spent nuclear fuel crisis in the United States. For decades, the U.S. Department of Energy (DOE) has been developing the Yucca Mountain Nuclear Waste Repository in Nevada. The biggest challenge with Yucca Mountain has been obtaining local consent. Recently, President Trump weighed in on Yucca Mountain, tweeting his opposition to the site and his desire to instead find “innovative approaches” to solve the nation's spent nuclear fuel problem. My hope is that the SONGS Task Force has provided many such ideas that can be a starting point for action.

As stated in the Surfrider Foundation's analysis prepared for this report, “Currently, there is no location for the interim storage or permanent disposal of any of the nation's commercially-generated [spent nuclear fuel].” Regardless of one's opinion on the past, present, and future of nuclear power, the lack of storage and disposal facilities for spent nuclear fuel is a massive problem that must be expeditiously addressed by the federal government, and I will continue to lead the charge to do so.

As our nation continues to grapple with long-term spent nuclear fuel issues, I introduced the Spent Fuel Prioritization Act (H.R. 2995), which would direct DOE to prioritize accepting high-level radioactive waste or spent nuclear fuel from decommissioned civilian nuclear power reactors that are located in high population density and earthquake hazard areas, such as SONGS.

I also advocated for \$25 million in the 2019 House Appropriations package to fund transportation planning and consent-based site selection for Consolidated Interim Storage (CIS). Despite some concerns around CIS, which are discussed in the Task Force report, I believe this funding is appropriate, and I am encouraged that similar funding has been included in President Trump's FY2021 budget request. With Yucca Mountain's future in doubt, developing a new geologic spent nuclear fuel repository could take several decades. I believe we cannot wait to move spent nuclear fuel from SONGS and other high-risk sites until a new geologic repository is operational, and that we must strive towards siting one or more CIS sites in the meantime.

The SONGS site offers specific challenges due to its proximity to seismic activity, rising sea levels, and large population density. Furthermore, recent concerns have arisen surrounding the choice of Holtec International to store onsite spent nuclear fuel, as well as training and monitoring being conducted by Southern California Edison (SCE). This report will explore each of these areas in depth.

The Task Force's report outlines just some of the major issues we face to securely store, remove, and eventually dispose of the spent nuclear fuel at SONGS, as well as some overarching national policy challenges that must be addressed.

In the near term, we must ensure the safety of the SONGS site, minimize the chance for accidents, improve emergency planning, and strengthen public trust. We must also begin planning in earnest to transport the waste away from SONGS — a highly challenging but not insurmountable task.

STAKEHOLDER ENGAGEMENT

During my first term in office, I have gathered a large quantity of relevant information from relevant stakeholders. The following is a partial list of meetings and discussions held on the subject of spent nuclear fuel:

- The full SONGS Task Force met on April 25, 2019; June 8, 2019; July 20, 2019; October 5, 2019; December 7, 2019; and January 23, 2020. The Task Force Technical Committee met on May 10, 2019; May 31, 2019; and August 5, 2019. The Task Force Policy Committee met on June 6, 2019; and September 5, 2019.
- I have had multiple meetings with representatives of the NRC and DOE, including the following: Chairman Kristine Svinicki (June 25, 2019), NRC Commissioner Jeff Baran (January 15, 2019), NRC Region IV Administrator Scott Morris (March 14, 2019; May 16, 2019), the NRC Office of Nuclear Material Safety and Safeguards (June 12, 2019), and the DOE Office of Spent Fuel and Waste Disposition (September 10, 2019).
- I have also written multiple letters to the NRC regarding SONGS and related matters, including on the following dates: January 18, 2019; April 15, 2019; April 17, 2019; June 11, 2019; June 21, 2019; October 17, 2019; and January 9, 2020. A copy of these letters, as well as responses from the NRC, are included in Appendix B of this report.
- On February 1, 2019, I met with SCE Community Engagement Panel leaders Dr. David Victor and Jerry Kern.
- On March 6, 2019 and October 24, 2019, I met with Counsel for the Commandant of the United States Marine Corps regarding the Department of the Navy's lease to SCE for SONGS.
- On April 9, 2019, I met with Dr. Alison MacFarlane, who chaired the NRC from 2012-2014, and Dr. Daniel Metlay, who served on the senior professional staff of the Nuclear Waste Technical Review Board.
- On April 16, 2019 and May 29, 2019, I was provided tours of SONGS by SCE staff. The April tour and meeting focused on long-term planning for the site, and the May tour and meeting focused on canister safety.
- On May 16, 2019, I met with Secretary of the Navy Richard Spencer regarding the Department of the Navy's lease to SCE for SONGS.
- On May 16, 2019, I wrote to SCE regarding its efforts to limit participation in our meeting on spent fuel canisters. A copy of this letter is included in Appendix B of this report.

- On June 7, 2019, I participated in a Congressional hearing of the House Oversight and Investigations Committee, Subcommittee on the Environment in Laguna Niguel, CA, which was attended by NRC representatives and led by Subcommittee Chair Harley Rouda (D-CA).
- On August 2, 2019, I visited the Yucca Mountain Nuclear Waste Repository in Nevada, along with Rep. Steven Horsford (D-NV), Rep. Bill Flores (R-TX), and Rep. Scott Peters (D-CA).
- On August 20, 2019, I attended and spoke at an NRC public meeting in San Juan Capistrano, CA.
- On October 7, 2019, I met with representatives from North Wind, Inc., regarding their strategic planning efforts on behalf of SCE.
- On October 9, 2019, I met with California State Senate President Pro Tempore Toni Atkins regarding oversight of spent nuclear fuel.
- On December 17, 2019, I met with representatives from Interim Storage Partners, who are in the process of securing a license for a Consolidated Interim Storage (“CIS”) facility in Texas.

TASK FORCE AREAS OF FOCUS

As the SONGS Task Force chairs describe in the report, the Task Force has been divided into a Policy Committee and Technical Committee, which together have provided substantive analysis and recommendations. The Policy Committee identified five categories for the Policy Recommendations section of this report:

- Federal Legislation and Regulatory Oversight
- State Legislation and Regulatory Oversight
- Best Practices
- Storage and Aging Management
- Safety and Handling

These categories have been completed by teams who have worked collaboratively on the end product. The report has been structured with both findings and associated recommendations, which refer to the Technical Committee’s section of the report and support the associated recommendations.

ACTIONS BASED ON KEY POLICY RECOMMENDATIONS

The SONGS Task Force made 30 policy recommendations, many of which have a federal nexus. I would like to highlight several important areas of my continued action at the federal level that are informed by these recommendations:

1. Our office will continue to aggressively pursue federal legislation that directs DOE to prioritize accepting high-level radioactive waste or spent nuclear fuel from decommissioned civilian nuclear power reactors that are located in high population areas and high earthquake hazard, as envisioned under the Spent Fuel Prioritization Act (H.R. 2995).
2. Our office will consider federal legislation amending the Atomic Energy Act to empower states to perform environmental review of the transport, siting, and storage of spent nuclear fuel. The first step will be to establish a group of federal, state, local, and tribal officials to study and report on the implications of providing states with these authorities
3. Our office will consider federal legislation to create a new Nuclear Waste Administration, as recommended by President Obama’s Blue Ribbon Commission on America’s Nuclear Future. The

Nuclear Waste Administration would establish a new facility siting process and a new framework to achieve consent for future storage and disposal sites, including mandates for accountability and enforcement.

4. Our office will consider federal legislation that requires spent nuclear fuel canisters to have a design life of at least 100 years. Failure risks of canisters due to stress corrosion cracking must not be overlooked. This includes requesting that the National Academy of Sciences conduct a thorough report assessing the following: the long-term risks of dry canister storage in below grade facilities; hydride reorientation of cladding in spent nuclear fuel storage; verification of damage detection, inspection, and repair methods; feasibility of repackaging/replacement procedure; and risk assessment of on-site storage of spent nuclear fuel.
5. Our office will continue to demand that the NRC use its existing regulatory authority to require resident inspectors at nuclear power plants while the plant is in the fuel handling and transfer phases of decommissioning. We will also advocate for independent monitoring and public reporting of relevant technical and safety information at SONGS and elsewhere.
6. Our office will work with appropriate federal agencies and the nuclear industry to authorize and develop a program that incentivizes spent nuclear fuel storage innovation through research and development to discover alternate ways to isolate nuclear material from humans and the environment.
7. Our office will work to encourage collaboration on best practices between military and civilian spent nuclear fuel handling authorities, and recommend NRC conduct a review of international practices related to storage of spent nuclear fuel inside hardened, enclosed buildings. We also will consider federal legislation to require the NRC to establish a new detailed quality and training program for all personnel at spent nuclear fuel sites as an element of licensing.
8. Our office will work to create a Congressional Spent Nuclear Fuel Caucus to discuss spent nuclear fuel storage, disposal, and transportation issues.

CONCLUSION

I would like to again extend my thanks to our SONGS Task Force co-chairs for their continued leadership, and to each member of the Task Force who volunteered their time and expertise in the production of this report. I am deeply encouraged by the outpouring of support for this endeavor in the months since the Task Force was formed.

Safety and transparency at SONGS, as well as the removal of spent nuclear fuel off the California coast and away from other high-risk areas as quickly and safely as possible, will continue to be among my top priorities for as long as I am honored to serve in Congress.

Yours Sincerely,

A handwritten signature in blue ink that reads "Mike Levin". The signature is fluid and cursive, with a large initial "M" and a stylized "L".

Mike Levin
United States Representative, 49th District of California

TRANSMITTAL LETTER

Dear Congressman Levin

On behalf of the members of the San Onofre Nuclear Generating Station Task Force, we transmit the final report of the Task Force. The report represents the views of all the Task Force members unless specifically noted in the report. We developed 30 recommendations based on 29 findings related to the challenge of dealing with spent nuclear fuel from the San Onofre Nuclear Generating Station outside San Diego, California.

You created the Task Force in January 2019 with the goal to address the safety challenges at the San Onofre Nuclear Generating Station (SONGS) and to drive solutions to deal with sensitive waste located at SONGS. To accomplish this directive, the Task Force established two committees: a technical committee and a policy committee. The technical committee reviewed the technical, legal and regulatory status of spent fuel storage issues at SONGS. The policy committee addressed the analysis of the technical committee and developed the findings and recommendations in the final report. Both committees created individual working groups to provide proposed findings and recommendations for the consideration of the full committee. The working groups reviewed reports from government, industry and public interest sources. Combined with the knowledge and expertise of the Task Force members, we developed the conclusions in this report.

The Policy Committee consisted of the following five working groups:

- Federal Legislation and Regulatory Oversight
- State Legislation and Regulatory Oversight
- Best Practices
- Storage and Aging Management
- Safety and Handling

The Task Force identified a number of challenges in the current approach to ensuring the safety of spent nuclear fuel at SONGS. These findings address failures or legal limitations in the organizations responsible for safety from the federal to the state government. In addition, the Task Force recognized that the lack of a long term disposal option creates specific challenges for the reactor storage of spent fuel. Included are a number of findings related to the specific problems that have occurred with spent fuel at SONGS. The Task Force also worked to identify best practices that could improve the short and long term safety of the SONG spent fuel. The full list of findings can be found in the report.

From the findings, the Task Force developed a comprehensive set of recommendations for government policy makers, government regulators, and industry participants. These recommendations provide specific guidance for Congress, state and federal authorities to improve the specific safety of fuel at SONGS and the overall national program for ensuring the long-term safety of spent nuclear fuel. The Task Force also identifies areas the current safety approach could benefit from the input of other organizations with relevant expertise. The full list of recommendations is provided in the report.

Many of these findings and recommendations provide a starting point for the effort to address the safety of spent nuclear fuel at SONGS. We expect that many of these points will evolve as the knowledge of long term spent fuel storage grows and the solutions emerge. We are prepared to update and revise these items as circumstances change.

Of particular note and importance, the two areas where there was the most significant concern and disagreement surrounds the storage cask currently being utilized for the storage of materials within the facility and the complete relaxation of the onsite radiologic monitoring requirement. Despite the lack of consensus on these issues within the Task Force, we believe they deserve continued attention.

Finally, we want to thank the tremendous effort of all the members of the Task Force. Dealing with spent nuclear fuel is a difficult technical, environmental, policy and communications challenge. The thoughtful, deliberative and extensive evidence and conclusions in this report represent the dedication and effort of the Task Force members. We think their work provides a comprehensive set of meaningful and reasonable solutions to improve the safety of spent nuclear fuel generated by SONGS. Moreover, we think their work provides key lessons for other sites dealing with similar spent fuel storage challenges. We appreciate the opportunity to work with such a committed and thoughtful group.

Finally, we commend you for your energy and commitment to resolving the spent fuel issues at SONGS and for leadership on the national challenge of dealing with spent nuclear fuel safely. We hope this report will provide useful information. We thank you for the opportunity to lead this Task Force and look forward to discussing the report with you as you continue your efforts to address this crucial issue for the people living and working near the San Onofre Nuclear Generating Station.

Sincerely,

Rear Admiral Leendert R. “Len” Hering, Sr., USN, Retired

Dr. Gregory B. Jaczko, former Chairman of the U.S. Nuclear Regulatory Commission

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KEY TERMS AND ABBREVIATIONS

CEC	Cavity Enclosure Container	NWPA	Nuclear Waste Policy Act
CCC	California Coastal Commission	OSHA	Occupational Safety and Health Administration
Disposal	The term “disposal” means the emplacement in a repository of high-level radioactive waste, spent nuclear fuel, or other highly radioactive material with no foreseeable intent of recovery, whether or not such emplacement permits the recovery of such waste.		
DOE	U.S. Department of Energy	SCE	Southern California Edison
DON	Department of the Navy	SLC	California State Lands Commission
DOT	U.S. Department of Transportation	SNF	Spent nuclear fuel. The term “spent nuclear fuel” means fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing.
EPA	U.S. Environmental Protection Agency	SONGS	San Onofre Nuclear Generating Station
FEMA	Federal Emergency Management Agency	Storage	The term “storage” means retention of high-level radioactive waste, spent nuclear fuel, or transuranic waste with the intent to recover such waste or fuel for subsequent use, processing, or disposal.
FSAR	Final Safety Analysis Report	UMAX	Holtec International Storage Module Underground MAXimum Capacity
ISFSI	Independent Spent Fuel Storage Installation	VVM	Vertical Ventilated Module
IPC	Interjurisdictional Planning Committee		
MLLW	Mean lower low water level		
MPC	Multi-purpose canister		
NRC	Nuclear Regulatory Commission		

EXECUTIVE SUMMARY

FINDINGS

- A. There are multiple agencies at the local, state, and federal levels that have jurisdiction over the storage, transportation, and safety of SNF, with the lead agency being the federal NRC.
- B. The Independent Spent Fuel Storage Installation (ISFSI) at SONGS could experience structural degradation from direct groundwater or seawater exposure over time, due to the close proximity to a rising coastal waterline and groundwater table.
- C. The current lack of a permanent repository for SNF is unacceptable and could put our communities, coastlines and other natural resources at risk.
- D. Consent-based siting, with meaningful partnerships and open communication among federal, state, local, and tribal leaders, is a critical step toward establishing a permanent SNF repository.
- E. Lack of an effective timeline and metrics for SNF has led to stranded SNF throughout the United States.
- F. Environmental review and safeguards for permanent disposal are needed for effective federal regulation of SNF.
- G. The management of SNF sites by non-utility private entities may endanger safety.
- H. Current storage canisters at SONGS lack retrievability of SNF.
- I. State agencies have not sufficiently coordinated efforts on SNF storage permitting.
- J. State agencies have not defined their authority over SNF oversight.
- K. Lack of nuclear industry transparency with stakeholders has led to renewed social and political pressure opposing the storage and disposal of SNF in the U.S.
- L. SNF dry storage canisters serve as radiation containment.
- M. The NRC regularly grants licensees significant exemptions from its rules.
- N. Non-utility entities are buying nuclear plants in the decommissioning phase.
- O. Lack of training by SNF storage contractors has led to negative consequences.
- P. Nuclear fuel handling procedures that ensure safety in military operations have not been applied to civilian nuclear power plants.
- Q. Other countries place SNF systems inside enclosed buildings.
- R. Pursuant to current law, DOE is required to take ownership of SNF canisters for permanent disposal.

- S. Most on-site SNF storage systems are above ground, on parking lot-type pads, where the storage canisters are each covered in a concrete overpack.
- T. There are instances of metal-to-metal contact between steel storage canisters and the storage vault liner when employees download canisters into the partially below grade storage system.
- U. The 2018 FSAR did not address ISFSI air vent blockage and cessation of canister passive cooling via flash flood, tsunami inundation, or landslide.
- V. The repackaging/replacement procedure for damaged canisters or damaged fuel is underdeveloped.
- W. SCE does not have an optimal and qualified long-term plan for inspection, maintenance, monitoring, or repair procedures.
- X. The current method the NRC uses to calculate risk – risk triplet method and risk-tree analysis – does not sufficiently quantify risk.
- Y. There is no ability to detect chemical damage to SNF in current dry storage configuration.
- Z. The high accessibility and visibility of the site leaves it extremely vulnerable to an act of malfeasance.
- AA. The decision of the NRC to allow SONGS to disable the alert and notification system has created significant public concern.
- BB. Lack of sufficient training and qualification requirements for canister handling were major factors in the August 2018 download incident.
- CC. Improper and inadequate equipment and technology were other major factors in the August 2018 download incident.



Image: Southern California Edison

RECOMMENDATIONS

1. Congress should consider federal legislation requiring a plan for removal of SNF from the SONGS site on San Onofre State Beach.
2. Congress should consider federal legislation that creates a framework to achieve consent for future storage and disposal sites.
3. Congress should consider federal legislation regarding SNF to include mandates for accountability and enforcement. Specifically, the legislation should include nationally agreed upon legislative definitions, timeline requirements, incentives for sites to accept SNF, and viable enforcement mechanisms.
4. Congress should consider federal legislation to allow for state authority to perform environmental review of the transport, siting, and storage of SNF.
5. The California Attorney General should intervene in any potential sale of utility-owned nuclear assets to non-utility private entities.
6. The California State Legislature should require those managing nuclear power plants to use easily retrievable and monitorable storage systems.
7. The California Public Utilities Commission, California Energy Commission, California Coastal Commission, and California State Lands Commission, among others, must share information with one another and require only best practices be implemented at storage sites.
8. States must be given authority to conduct oversight of SNF storage.
9. The California Public Utilities Commission should prevent utilities that own nuclear assets from increasing rates for decommissioning.
10. The California Public Utilities Commission should require power plant owners to establish funding reserves from nuclear power plant owner resources to cover emergency response to high levels of radiation releases, as long as radioactive material is on-site.
11. Congress should support the creation of a separate, federal Nuclear Waste Administration to mandate best practices.
12. Congress should consider legislation to adopt the Blue Ribbon Commission on America's Nuclear Future's recommendation to establish a new facility siting process, establish a new SNF management organization, and broaden support to municipalities affected by transportation routes.
13. Congress should consider legislation that restricts NRC from approving canisters with a design life of less than 100 years.
14. Congress should consider legislation requiring the NRC to create capitalization minimums for businesses applying to purchase nuclear power plants in decommissioning.
15. The NRC should use its existing regulatory authority to require permanent on-site inspector roles at nuclear power plants while the plant is in the fuel handling and movement phases of decommissioning.
16. Congress should encourage collaboration on best practices between military and civilian SNF handling authorities.
17. The NRC should conduct a review of international practices related to storage of SNF inside hardened, enclosed buildings.

18. Congress should work with DOE and industry to authorize and develop a program that incentivizes SNF storage innovation through research and development to discover alternate ways to isolate nuclear material from humans and the environment.
19. Members of Congress should create a Spent Nuclear Fuel Caucus to discuss SNF storage, disposal, and transportation issues.
20. The DOE and nuclear power plant owners should reach a consensus on which canister and storage system to use for storage of SNF and apply jointly to the NRC for the license.
21. Congress should request that the National Academy of Sciences conduct a thorough report assessing the following: the long-term risks of dry canister storage in below grade facilities; hydride reorientation of cladding in SNF storage; verification of damage detection, inspection, and repair methods; feasibility of repackaging/replacement procedure; and risk assessment of on-site storage of SNF.
22. The nuclear power plant owner and the NRC should conduct an FSAR study to mitigate loss of passive cooling in ISFSI via air vent blockage and inundation with water from rain or coastal flooding, or sand and silt from a landslide.
23. Congress should require the DOE and nuclear power plant owners to develop a technical procedure for canister repackaging/replacement prior to further NRC canister license approval, SNF pool decommissioning and removal, and loading of canisters in an on-site ISFSI.
24. Congress should require the NRC to implement a new method of conducting a failure mode and risk analysis to determine the risk probability number, a more accurate measure for each risk factor. DOE and NRC should cooperate in this risk assessment process.
25. The SNF at SONGS requires a storage configuration with more levels of redundancy and must be moved to a technically defensible storage facility to reduce threats. From a security standpoint, the SNF should be moved further away from the coastline.
26. Congress should budget adequate funding annually to ensure *proper and comprehensive* emergency planning measures are in place for all surrounding municipalities to implement for the safety of their residents.
27. Congress should work towards a consent-based final disposal site including prioritization for sites with higher risk of sea level rise, high population density and high potential for seismic events, including as envisioned under the Spent Fuel Prioritization Act (H.R. 2995).
28. The NRC should consider requiring SONGS to reenact the alert and notification system because the costs or downsides are far outweighed by its benefits.
29. Congress should consider legislation to require the NRC to establish a new detailed quality and training program for all ISFSI personnel as an element of ISFSI licensing.
30. Congress should consider legislation requiring ISFSI licensees to utilize additional equipment and technology for canister loading.

FEDERAL LEGISLATION AND REGULATORY OVERSIGHT

FINDINGS AND RECOMMENDATIONS

INTRODUCTION

Due to the hazards that spent nuclear fuel (SNF) storage poses to our community and coastal environment, the SONGS Task Force has established a method for local stakeholders to address safety challenges at SONGS through regular meetings, research, reports and analysis. This Task Force formed a committee to analyze the current federal legislative and regulatory oversight framework to address these threats and recommends that new federal legislation be introduced.

The United States has a SNF problem and has yet to find an answer. There are over 90,000 metric tons of nuclear waste in the United States;¹ however, there are no immediately viable long-term repositories for this SNF. Currently, most SNF is stranded, stored at or near the facility where it is generated.² SONGS is currently holding 3.6 million pounds of SNF, approximately two percent of the national total, nestled between an active and valuable beach recreation location and an active federal highway thoroughfare servicing hundreds of thousands of people per day.

SONGS is situated 100 feet away from the shoreline and is adjacent to world renowned surf breaks, such as Trestles and San Onofre Old Man's, that bring hundreds of thousands of visitors each year. It is also directly adjacent to Interstate 5, one of the U.S.'s busiest highways, and within the vicinity of eight million people.³ Of particular concern, this location is also within close proximity to the Newport-Inglewood-Rose

Canyon fault zone and therefore is susceptible to earthquake activity.⁴ If an accident were to occur, the effects of radioactive SNF would have the potential to adversely affect the ocean, marine life, beach goers, a major highway, and densely populated neighboring communities.

All these factors make SONGS an inadequate location for the storage of SNF (not to mention community opposition). The U.S. Department of Energy (DOE) and Nuclear Regulatory Commission (NRC) have yet to designate and license a repository location for the safe long-term disposal of SNF. The Yucca Mountain project in Nevada was the primary effort to establish a permanent disposal facility. However, former President Barack Obama abandoned the Yucca Mountain project in 2008 due to Nevadans' heavy opposition to the project. Since then, several Congresses have proposed to amend the Nuclear Waste Policy Act (NWPA) of 1982 in an effort to find appropriate disposal locations for the U.S.'s SNF, but no recent progress has been made in the legislature.

Through research and analysis of SNF statutes, regulations and proposed amendments, as well as the shortcomings and pitfalls of the current regulatory regime, the Task Force has concluded that new effective federal legislation is needed to address the important issue areas articulated herein.

FINDINGS

A. There are multiple agencies at the local, state, and federal levels that have jurisdiction over the storage, transportation, and safety of SNF, with the lead agency being the federal NRC.⁵

The NRC is the agency that licenses, regulates, and oversees all aspects of nuclear power generation—including the storage, transportation, and safety of SNF. However, the NRC works with other federal agencies such as the Federal Emergency Management Agency (FEMA), U.S. Environmental Protection Agency (EPA), and Department of Transportation (DOT) to oversee emergency response, environmental safety, and transportation of SNF, respectively. Under the NWPA, the NRC is also authorized to work with the U.S. DOE to develop a permanent repository for the nation's SNF. The actual disposal of the SNF in a repository is the DOE's responsibility, while NRC is responsible for licensing and overseeing the disposal.

On the state level, various state land use agencies, such as the California Coastal Commission (CCC) and California State Lands Commission (SLC) have jurisdiction over applicable land use permits and leases for construction, operation, and maintenance of nuclear power plants on state land.

On the local level, local governments are largely responsible for emergency response in the event of an accident at a nuclear power plant that causes the release of radioactive material into the surrounding environment. Local governments also play a large role in keeping their constituents informed about events at nearby nuclear power plant facilities. The primary mechanism for local government involvement at SONGS is through the Interjurisdictional Planning Committee (IPC), which oversees emergency planning at SONGS within the Emergency Planning Zone (area within a 10-mile radius from SONGS). The

IPC's mission is to integrate emergency plans, coordinate decision-making for SONGS-related activities, and educate the public. The IPC is a partnership that is recognized at the local, state, and federal levels. The IPC is meeting monthly throughout the SONGS decommissioning process. Furthermore, each IPC jurisdiction maintains their own emergency response plan that is specific to an emergency at SONGS. However, the IPC entities worked together to develop joint standard operating procedures and policies that all entities will follow during a response to an emergency event at SONGS.

The nature of each entity's jurisdiction will vary depending on the location and status of the nuclear power plant. For example, because SONGS is located at Marine Corps Base Camp Pendleton on Department of Navy (DON) land, DON has played a large role as the reactor's landlord throughout its lifecycle. However, other power plants could be located on state- or federally-owned land, which would invoke different jurisdictional roles.

B. The Independent Spent Fuel Storage Installation (ISFSI) at SONGS could experience structural degradation from direct groundwater or seawater exposure over time, due to the close proximity to a rising coastal waterline and groundwater table.⁶

Due to the immediate coastal location and subterranean design of the Holtec ISFSI at SONGS, the proximity of this structure to both seawater and groundwater is concerning. The exact subterranean location of the base of the ISFSI is reported at different elevations, with the NRC reporting the location at 8.5 feet Mean lower low water level (MLLW)⁷ and CCC reporting the ISFSI base at 7.5 feet MLLW.⁸ Regardless, the groundwater table at the site of the ISFSI sits in

close proximity at 5.4 feet MLLW and fluctuates as high as 6.1 feet MLLW,⁹ meaning the ISFSI base can already be as close as 1.4 feet (or 2.4 feet, according to the NRC) above the water table. Over the next 50 years, coastal hazards, including exacerbated storms, coastal erosion, sea level rise, groundwater level rise and seawater intrusion into groundwater aquifers could cause the ISFSI to be directly exposed to seawater and/or freshwater.¹⁰

The main threat to the structural integrity of the ISFSI concrete and Vertical Ventilated Module (VVM) structures is contingent upon the porosity of the concrete, as water permeability through the structure and exposure to reinforcing steel or the Cavity Enclosure Container (CEC) could cause corrosion and subsequent loss of structural integrity of the rebar, CEC, and concrete structure as a whole. This could have impacts on the eventual retrievability of downloaded canisters due to reduced ability for the VVM and/or ISFSI pad to withhold necessary weight loads. It could also reduce earthquake resilience and missile resilience. As mentioned in the Holtec UMAX Final Safety Analysis Report (FSAR), “[t]he materials that comprise the dry SNF storage should maintain their physical and mechanical properties during all conditions of operations. The SNF should be readily retrievable without posing operational safety problems”.

Notable potential impacts to the ISFSI and canisters from direct groundwater or seawater exposure include: (1) reduced structural integrity of the concrete “monolith” due to corrosion induced spalling from uncoated rebar in reinforced concrete, (2) corrosion of exposed carbon steel of the CEC divider shell if coating is scratched during canister downloading, (3) lack of an enclosure wall to further avoid groundwater intrusion, (4) chloride induced stress corrosion cracking on the Multi-purpose canister (MPC) and (5) general corrosion of the MPC due to scratching of the chrome-oxide layer during downloading. Additional information on the ISFSI components and issues listed above would

help determine the risk to the ISFSI from water exposure, including clarification on any coatings or sealants used at SONGS, and the level of corrosivity of sediment adjacent to the SONGS ISFSI.

While the FSARs determine that a 60-year design life and 100-year service life are expected for the ISFSI, including the VVM and reinforced concrete, the atmospheric and environmental conditions at the plant may warrant a request for more robust inspections of the ISFSI. As stated in the UMAX FSAR “ISFSIs located in areas subject to atmospheric conditions that may degrade the storage cask or canister should be evaluated by the licensee on a site-specific basis to determine the frequency for such inspections to assure long-term performance.”

C. The current lack of a permanent repository for SNF is unacceptable and could put our communities, coastlines and other natural resources at risk.¹¹

SONGS was never intended to be a long-term storage location for SNF. The proximity to the coastline, susceptibility to geologic instability, and location within a densely populated area make it a very poor location to store SNF. Over eight million people reside in the vicinity and the SNF is located directly adjacent to Interstate 5 Freeway, one of the nation’s busiest highways, servicing hundreds of thousands of freeway passengers per day. With increasing rates of coastal erosion, sea level rise, and likelihood of more frequent and severe storms due to climate change, the long-term storage of SNF on the coastline amounts to an unacceptable risk to the communities and resources at stake.

Other sections of this report speak to the potential hazards and the specific risks associated with this SNF storage location. At a minimum, concerning events that could lead to reduced integrity of the current storage system include: extreme sea level rise scenario (including inundation/submersion

of the ISFSI), terrorist attack, groundwater intrusion, degraded or compromised canisters, landslide event, and internal accident and errors in management of the SNF (such as the August 2018 near-drop incident).

D. Consent-based siting, with meaningful partnerships and open communication among federal, state, local, and tribal leaders, is a critical step toward establishing a permanent SNF repository.¹²

The NWPA failed to give affected states and Native American tribes meaningful regulatory authority in the maintenance, transportation, and disposal of SNF within their boundaries. This led to political stalling and undermined the intent of the NWPA's SNF disposal regime. In the meantime, decommissioned plants are indefinitely serving as SNF storage sites. However, these plants are inadequate storage sites for SNF because they are not built for long-term or permanent disposal. Further, affected states and Indian tribes are not consenting to the disposal of the SNF in such close proximity to their communities.

According to the Blue Ribbon Commission on America's Nuclear Future (BRC), rather than attempting to site SNF facilities over the objections of host jurisdictions, success is more likely to result from a consent-based process that gives all levels of government a "meaningful consultative role in important decisions."¹³ A "meaningful role" is not fully defined here, but it could also include "direct authority over aspects of regulation, permitting, and operations where oversight below the federal level can be exercised effectively and in a way that is helpful in protecting the interests and gaining the confidence of affected communities and citizens."¹⁴

E. Lack of an effective timeline and metrics for SNF has led to stranded SNF throughout the United States.¹⁵

There is a lack of meaningful or effective penalties for non-compliance within the NWPA or metrics to force action.

F. Environmental review and safeguards for permanent disposal are needed for effective federal regulation of SNF.

The NWPA provides general guidelines the Energy Secretary must adhere to when evaluating potential SNF repository sites.¹⁶ Among these guidelines are general factors that disqualify a site from serving as an SNF repository such as proximity to natural resources, seismic activity, and atomic energy defense activity, and water resources. Additional disqualifying criteria include proximity to the National Park System, the National Wildlife Refuge System, the National Wild and Scenic Rivers System, the National Wilderness Preservation System, or National Forest Lands. These specific land-based ecosystems of national significance are protected from SNF.

RECOMMENDATIONS

1. Congress should consider federal legislation requiring a plan for removal of SNF from the SONGS site on San Onofre State Beach. (Finding A, B, C)

It is incumbent upon the federal government to ensure that there is meaningful action to locate and implement appropriate long-term siting and a final resting place(s) for SNF. There must be meaningful collaboration between states and the federal government in order to achieve this goal. The current federal framework for regulating SNF siting and disposal is insufficient and has led to stranded SNF throughout the country, jeopardizing our communities and some of the nation's most sensitive natural resources, such as the beloved coastline at San Onofre State Beach.

2. Congress should consider federal legislation that creates a framework to achieve consent for future storage and disposal sites. (Finding A, E)

In order to address the current failure to give affected communities, states, and native nations meaningful involvement in the maintenance and transportation of SNF within their boundaries, new legislation should grant affected communities consultation and authority relating to the terms on which they would host a SNF facility. Affected states and native nations should be able to adopt additional safety requirements as they see fit.

3. Congress should consider federal legislation regarding SNF to include mandates for accountability and enforcement. Specifically, the legislation should include nationally agreed upon legislative definitions, timeline requirements, incentives for sites to accept SNF, and viable enforcement mechanisms. (Findings A, C, E)

In order to address the lack of accountability for movement of SNF, legislation should require

a strict timeline for permanent disposal and mitigation requirements if there is deviation from the timeline. There must also be enforcement mechanisms to demand this change and not simply accept failure, as with past legislation. The enforcement requires “teeth” in the legislation that will exact penalties and/or require mitigation for failures to achieve certain milestones with enumerated deadlines.

In order to ensure accountability, the stakeholders and the public should have the ability to obtain information, to require oversight by independent outside experts/inspectors, and to require that these experts issue public findings and recommendations by a certain time. The legislation should require and establish responsibility for public reporting of on-site accidents, near accidents, and remedies. There should be penalties for failure to adhere to the requirements and responsibilities under this legislation.

Federal legislators should consider forming a new agency with one purpose: to locate and implement permanent disposal of SNF through a consent-based process and within a certain time. Federal officials should explore other ways to force action, such as penalties, especially on regulated industry participants in this process.

4. Congress should consider federal legislation to allow for state authority to perform environmental review of the transport, siting, and storage of SNF. (Finding F)

In order to address critical safety and environmental review concerns, states should have regulatory authority for SNF storage and removal. Additionally, EPA should have environmental review authority for the siting process, and NRC regulations should be amended to allow for environmental review under current laws and standards (rather than allow for preemption).

Relevant environmental review and protection law should include protection for both land and marine resources. In order to address resource protection, proximity to a marine protected area should be included as a general factor that could disqualify a site from serving as an SNF repository.

Environmental law cannot be curtailed or sacrificed for the sake of expediency. The siting and transportation of SNF must proceed with full review and safeguards for our citizenry and natural resources. Both federal and state environmental laws should be adhered to in the process of siting future storage locations and developing the transportation plan for SNF. In addition to specific land-based ecosystems of national significance that are protected from SNF,

the same protection should be afforded to marine-based ecosystems of national significance.

State laws should not be preempted or subordinated due to federal law on SNF storage and disposal. In order to progress and identify acceptable areas for SNF repository siting, there must be meaningful collaboration between state governments and the federal government. In achieving this objective, Congress could amend the NWPA to reflect standards that are similar to other environmental statutes that allow for stricter state environmental safeguards, such as the Coastal Zone Management Act. Local environmental protections, land use plans and other relevant municipal ordinances should be taken into account for the appropriate siting and transportation of SNF.

CONCLUSION

The time to move SNF off the coast at San Onofre State Beach is long overdue and federal action is needed for a solution. It currently sits in a location that threatens the approximately eight million people who reside in the vicinity, one of the nation's busiest highways in the I-5 corridor, the country's second busiest intercity passenger rail corridor in the Los Angeles – San Diego – San Luis Obispo Corridor, a military base, the fifth most popular state park in California, and a beloved coastline. Before threats become realities,

the federal government must safely move SNF from SONGS to an appropriate final repository. In order to do so, changes must be made to the federal laws and regulations for SNF management. The federal government must ensure that it allows states to meaningfully participate in regulating the SNF that will affect their cities and towns, while continuing to pay close attention to environmental issues. Although there is no perfect solution, keeping SNF at SONGS is unacceptable.

STATE LEGISLATION AND REGULATORY OVERSIGHT

FINDINGS AND RECOMMENDATIONS

INTRODUCTION

The State Policy Committee analyzed policy gaps at the state oversight level as it relates to corporate takeovers of SNF storage sites, lack of retrievability of SNF from canisters in use, state agency coordination, state authority on SNF, and collaboration on federal solutions. The focus of the work is to advance the conversation beyond the current stalemate and improve outcomes for health and safety in ways that addresses unique site-specific and state-specific challenges.

Historically, states have hesitated to lead on SNF policy because of threats of federal preemption on human health and safety by the NRC. However, states have several opportunities for action at their disposal when leaders choose to approach the issue. As the nation enters indefinite on-site storage of SNF, the involvement and oversight of state leaders becomes more critical.

A state's economy, resources, and way of life depend entirely on communities remaining free of hazardous materials in land, water, and air. We learned from Chernobyl and Fukushima that disasters at operating reactors pose serious consequences and force the creation of exclusion zones where people cannot live. After careful study, we have found several global knowledge gaps in long-term dry storage of SNF. The consequences of these knowledge gaps are amplified because many storage decisions were made on the assumption that off-site permanent disposal would be available in the near term.

Policy recommendations were developed after careful review and analysis of Task Force Technical Committee reports, latest scientific articles, and history of state engagement in nuclear energy policy.



Image: Southern California Edison

FINDINGS

G. The management of SNF sites by non-utility private entities may endanger safety.

Economists have weighed in on the liability and economic risks posed by recent Holtec International and NorthStar Group Services acquisition applications and purchases of nuclear power plant sites as they enter decommissioning.¹⁷ As of the publishing of this report, at least six nuclear power plant sites across Massachusetts, New York, New Jersey, Vermont, Florida, and Michigan have been purchased or have pending purchase agreements between a third-party and the NRC.^{18,19} These companies lack the experience and financial reserves to complete these projects safely using best practices.²⁰ Maura Healey, Attorney General of Massachusetts, sued the NRC over a license transfer of Pilgrim Nuclear Power Station to Holtec International, another private business.²¹ If entities fail to have necessary training, safety protocols, financial capital, and sound financial management, such transfer of corporate ownership could endanger the health, safety, and economic stability of the 30 states which store SNF²²

H. Current storage canisters at SONGS lack retrievability of SNF.

This image demonstrates the difference between the above ground storage system at Diablo Canyon in San Luis Obispo and the partially below grade system at SONGS in San Diego County.²³

Image: Samuel Lawrence Foundation

The storage canister model in use at SONGS is welded shut. According to a March 2019 NRC report, these canisters lack the ability to meet the certificate of compliance requirements for inspection, monitoring, maintenance, and repair via ASME-qualified methods.²⁴ Canisters in use at SONGS are stored in a secondary concrete structure called an ISFSI. There are two of these structures on-site, an Areva NUHOMS and a Holtec UMAX. The Holtec UMAX ISFSI is partially below grade and subject to concrete deterioration, atmospheric corrosion, heat damage, and environmental damage.²⁵ The design of the concrete ISFSI prevents the visualization and damage detection of the ISFSI, canisters, and SNF stored within.²⁶ Damage to the ISFSI structure and storage canisters may prevent the retrieval of the storage canisters and therefore the SNF assemblies inside the canisters.²⁷ Only two reactor sites in the nation use the Holtec UMAX Storage system: SONGS (CA) and Callaway (MO).²⁸

The lack of retrievability is further complicated by the fact that SCE has not developed and verified a canister repackaging/replacement procedure in the event that a damaged storage canister must be emptied into a new and more robust canister system.^{29,30}



I. State agencies have not sufficiently coordinated efforts on SNF storage permitting.

Most of the time, state agencies work independently and do not share information among other agencies at the state and federal levels. The agencies make SNF permit decisions almost entirely based on utility documents and testimonies.³¹ The fact that state agencies are not sufficiently vetting information from the utility is concerning.

J. State agencies have not defined their authority over SNF oversight.

States are reluctant to exercise their authority over SNF storage because of threats of NRC federal preemption on health and safety matters relating to radioactive material.^{32,33,34} In 2002 the State of California took bold action to regulate low-level radioactive waste with the passage of AB 2214, thereby amending the California Health and Safety Code.³⁵ This law set minimum objectives for the design of low-level radioactive waste isolation facilities. Low-level radioactive waste is often material used in medical procedures.³⁶

RECOMMENDATIONS

5. The California Attorney General should intervene in any potential sale of utility-owned nuclear assets to non-utility private entities. (Finding G)

The Task Force is concerned whether any company can safely manage a site with SNF when a decommissioning fund is exhausted. This recommendation seeks to avoid a situation where a non-utility buyer exhausts a nuclear decommissioning fund and cannot charge ratepayers to cover decommissioning costs.

If nuclear power plant owners attempt to sell nuclear plants in decommissioning, then the California Attorney General should take action to ensure non-utility buyers have the ability to fund decommissioning even if the decommissioning fund is exhausted.

6. The California State Legislature should require those managing nuclear power plants to use easily retrievable and monitorable storage systems. (Finding H)

SNF storage canisters are the only containment mechanism preventing radiation exposure to

our environment and people. The state must compel nuclear power plant owners and DOE to develop, validate through the National Academy of Sciences, and seek NRC approval for a canister repackaging/replacement procedure. This process should also include study of advanced canister models with the ability to be inspected, monitored, maintained, and repaired.

SNF must be accessible for inspection, damage detection, repair, and eventual transport. Canisters must be required to meet the storage license criteria for retrieval. Retrieval is defined here as removal from the ISFSI storage facility and opened for fuel assemblies to be removed from the canisters. If SNF inside a storage canister cannot be retrieved, then new risks and downstream storage issues may become a hindrance to the transportation to an off-site storage facility.

A number of initiating factors could create a scenario where a canister and its SNF are rendered irretrievable and lead to radiation leaks, including natural disasters; acts of malfeasance; or aging-related degradation of fuel cladding, SNF, storage canister, or ISFSI.³⁷

In addition, there is no transfer station on-site to repack/repackage/replace a damaged canister.^{38,39}

7. The California Public Utilities Commission, California Energy Commission, California Coastal Commission, and California State Lands Commission, among others, must share information with one another and require only best practices be implemented at storage sites. (Finding I)

It is critical that state agencies remain engaged on SNF storage to protect the interests of Californians. The sharing of information among state agencies should improve the decommissioning decisions made over time.

Permits and licenses are approved by the NRC and various California agencies without the utility meeting the permit conditions on the day of approval. The decommissioning permit approvals by the California Coastal Commission in 2015 and 2019 are key examples of a practice where conditions of the permit were impossible to meet upon permit approval, namely special condition 2(d), “Evidence that the fuel storage casks will remain in a physical condition sufficient to allow off-site transport, and a description of a maintenance and inspection program designed to ensure that the casks remain transportable for the full life of the amended project,” in California Coastal Commission application number 9-15-0228 in 2015.^{40,41} This is a serious oversight on the part of the leaders charged with protecting the interests of the state, its residents, and the environment.

8. States must be given authority to conduct oversight of SNF storage. (Finding J)

States have been recipients of nuclear energy power generation and therefore must be responsible for joining the search for storage solutions. Often state leaders attribute inaction to the federal government, instead of seeing an opportunity for collaboration to expedite solutions. There is a clear opportunity for the

State of California to lead the charge for effective engagement between federal and state agencies through economic enforcement, legal challenges to third-party license transfers, increasing state authority, rate regulation, and SNF storage accountability. California can serve as a model for the other 29 states with SNF.

There are several regulatory oversight actions on SNF storage available to states that have yet to be authorized. Significantly more state oversight is necessary to ensure safety in operations. California should lead the development of a “state’s oversight structure on nuclear waste storage,” and the model can be replicated in other states.

9. The California Public Utilities Commission should prevent utilities that own nuclear assets from increasing rates for decommissioning. (Finding J)

The California Public Utilities Commission has an approval role in utility rate setting hearings and manages oversight of disbursements to the nuclear decommissioning funds. To ensure effective protection of California resources, it is important that the California Public Utilities Commission does not provide any opportunity for utilities or third-parties to repeatedly increase rates during the decommissioning phase.

10. The California Public Utilities Commission should require power plant owners to establish funding reserves from nuclear power plant owner resources to cover emergency response to high levels of radiation releases, as long as radioactive material is on-site. (Finding J)

The potential for SNF contamination threatens California’s natural resources, economy, food, water, health, safety, and transportation. If our communities are exposed to high levels of radioactive contamination, the effects would be catastrophic. For these reasons, it is imperative that California takes an active role to ensure there is an incentive for safety on the part of the

nuclear power plant owner. Establishing funding reserves from the nuclear power plant owner would provide the resources necessary to take immediate action were there to be contamination

from natural disasters or acts of malfeasance. No decommissioning reserves should be requested from ratepayers.

CONCLUSION

State agencies and leaders have not yet exercised their influence and power to regulate the storage of SNF. We have found that there are several points at which the state can intervene and incentivize safety. The California Public Utilities Commission holds the signing authority to the decommissioning trust fund and must exercise stronger oversight by not allowing rate increases in the decommissioning phase and requiring funding reserves from nuclear power plant owner resources to cover emergency responses while radioactive material is on-site.

California must require retrievable and monitorable storage canisters and storage systems, increase state oversight authority on SNF, and codify legislation on SNF storage in the state. States must remain more vigilant to the risks of

SNF storage at reactor sites over decades. State agencies must share information with one another prior to approving SNF storage permits.

Two risks loom large over the next several decades. The corporate purchases by Holtec, NorthStar and other non-utility businesses are a danger to the economy, resources, health, and safety of California and other states. The state must vehemently oppose any efforts for corporate purchases of nuclear power plants in decommissioning. The concerns about SNF retrievability from canisters in the partially below grade storage system also pose serious danger, given the close proximity to the ocean and unstable coastal bluffs. These are actions the state can immediately implement to bolster SNF oversight measures.

BEST PRACTICES

FINDINGS AND RECOMMENDATIONS

INTRODUCTION

The Best Practices Policy Committee focused on defining improvements which would immediately provide more structure and safety backstops to the U.S. SNF management program. These findings list some of the critical best practices, which are currently absent from the system. Future study on how to apply international best practices in the U.S. would be a great value to legislators, nuclear power plant owners, and other decision makers.⁴²

There is a lack of technical data on best practices across the world because improvements are slow, still in development, and not widely publicized. Nuclear energy is a relatively new technology with work beginning in the 1950s. SNF storage technologies have not existed long enough to test durability in real radiation conditions over time.

Year after year, Congress budgets little to no money toward SNF storage, transportation, and

disposal.⁴³ The lack of Congressional funding has stunted any progress in the siting, construction, and approval of SNF disposal sites. Communities are growing distrustful of utilities and the nuclear industry in general because of their lack of transparency, focus on profit, and frequent errors. In the early 2000s, waiting on a national permanent repository was a smart move. Today, we must strongly consider all other options for off-site storage, because the current situation of SNF stranded on-site near reactors at 65 different cities presents a clear and present danger.

Policy recommendations were crafted after careful review and analysis of Task Force Technical Committee reports, interviews with nuclear experts, international regulator websites and documents, news reports, and written responses from NRC staff and commissioners.



FINDINGS

K. Lack of nuclear industry transparency with stakeholders has led to renewed social and political pressure opposing the storage and disposal of SNF in the U.S.

A serious communication breakdown is evident among stakeholders affected by the nuclear industry. Nevada and New Mexico rejected SNF storage or disposal in their state outright.^{44,45} Members of the public have lost trust in utilities, regulators have dropped the ball on safety, Members of Congress stunt any progress by leaving SNF storage and disposal direction and dollars out of annual budgets, state and local elected officials mostly bypass the issue, and educational institutions rarely raise SNF problems in their curricula.⁴⁶ This absence of responsibility for SNF leaves many people confused, blaming other agencies for their inadequacies, and does not advance progress on disposal solutions for the SNF issue.⁴⁷

Some northern European countries have made substantially more progress than the U.S. when it comes to constructing permanent repositories and transporting SNF across communities.⁴⁸ Those countries benefit from having fairly small populations with shared values. The U.S. must recognize SNF disposal as a shared national problem and stop passing the buck. The competing interests of nuclear power plant owners and surrounding residents is becoming an obstacle, as is not recognizing SNF disposal as a common problem affecting all people.

L. SNF dry storage canisters serve as radiation containment.

The components that make up SNF, radionuclides, decay at various rates, remain dangerously radioactive for 200,000 years, and must be isolated from humans and the environment, forever.⁴⁹ Storage canisters and the ISFSI they are stored in are the only protection

between SNF, people, and the environment.

The general factors when considering what containment canister to purchase include size, cost, heat transfer, storage space on-site, and density of fuel assemblies packed inside.⁵⁰ The utility selection criteria often overlook redundancies, or several layers of protection which prevent radiation exposure, and the ability to sufficiently inspect, monitor, maintain, and repair canisters.⁵¹ SCE and other nuclear power plant owners have chosen canisters with 5/8-inch walls in a concrete overpack that lack redundancies and are often stored outdoors and exposed to hazards.⁵²

M. The NRC regularly grants licensees significant exemptions from its rules.

NRC licensing and permitting for storage lacks transparent review processes and critical analysis of applications that one expects of a regulator.⁵³ Many NRC licenses are approved with a long list of exemptions to rules, giving significant flexibility to utilities.⁵⁴ Current NRC inspection criteria for SNF storage are often simply a reduction of the list of inspection criteria that is typical for an operating reactor. This lack of standards in storage and inspection criteria removes key safety incentives in the SNF storage phase.

N. Non-utility entities are buying nuclear plants in the decommissioning phase.

One concerning development involves non-utility businesses applying to the NRC to buy up nuclear plants in the decommissioning phase.⁵⁵ In the past, utility companies were profitable when they ensured safety in their nuclear power plant operations.⁵⁶ Non-utility companies who purchase nuclear power plants in decommissioning often lack the technical expertise and financial resources needed to guarantee successful decommissioning and to safely steward the tons of SNF left on-site.⁵⁷

When non-utility actors purchase nuclear power plants, costs are deeply cut and timelines are often decreased by decades.⁵⁸ Safety goes down in worker safety, environmental exposure, and increases risk of financial exposure for states and citizens who own assets in the surrounding areas.^{59,60}

Companies are attracted to the opportunity to profit, from each nuclear power plant's multi-billion-dollar ratepayer-funded decommissioning money, by taking a minimalist approach to SNF storage.⁶¹ Currently there are no NRC regulations regarding the purchasing of nuclear power plants in decommissioning, with long-term SNF storage on-site.

O. Lack of training by SNF storage contractors has led to negative consequences.

Human error is of grave concern when it comes to SNF. The August 2018 near miss event at SONGS was in part attributed to undertrained workers, as reported by an on-site Occupational Safety and Health Administration (OSHA) contractor.^{62,63} This incident occurred when a 54-ton, fully-loaded canister was misaligned, and nearly fell 18 feet into a storage vault. SCE did not promptly report the event to regulators.⁶⁴ The contractors who made this serious canister misalignment error were employed by SCE's contractor, Holtec.⁶⁵

P. Nuclear fuel handling procedures that ensure safety in military operations have not been applied to civilian nuclear power plants.

The high standards for nuclear handling safety created by the military do not apply to civilian nuclear handling. The cause of this discrepancy is a failure of administration and regulatory management of SNF.⁶⁶ These different standards led to a separation between military and civilian nuclear handling procedures, which resulted in significantly more safety incidents in civilian

nuclear handling than in military.⁶⁷ The creation of formal collaboration and cross-training opportunities between military and civilian nuclear handling programs would incentivize safety and spur research and development for SNF storage.⁶⁸

Our SONGS Task Force Co-Chair, Admiral Len Hering, has extensive experience serving as a Nuclear Weapons Safety Officer, Handling Officer, and Surety Officer. He voiced concerns over SNF handling procedures in a January 2019 report where he stated that, "At SONGS I find that virtually none of the protocols that should be expected for the safe handling of this dangerous material are present."⁶⁹

Q. Other countries place SNF systems inside enclosed buildings.

Storing canisters inside a closed building would have to be technically evaluated to determine what impacts the building would have on loading operations and canister performance.⁷⁰

Buildings enclosing SNF storage would reduce radiation levels at the site boundary to some extent.⁷¹

It is unclear if San Onofre is a good site for a retrofit of a building enclosure.

RECOMMENDATIONS

11. Congress should support the creation of a separate, federal Nuclear Waste Administration to mandate best practices. (Finding K)

Currently, NRC operations are skewed towards operating reactors. The original plans for the long-term, off-site storage and disposal of SNF have not materialized^{72,73} A Nuclear Waste Administration, with a singular focus on the radioactive waste stream, is necessary to manage oversight in the absence of NRC regulatory accountability and substantial SNF storage oversight.

The U.S. needs a federal agency whose scope is focused on SNF storage and eventual disposal.

12. Congress should consider legislation to adopt the Blue Ribbon Commission on America's Nuclear Future's recommendation to establish a new facility siting process, establish a new SNF management organization, and broaden support to municipalities affected by transportation routes. (Finding K)

The Blue Ribbon Commission provided several relevant recommendations for SNF storage and disposal, and siting of permanent repositories.⁷⁴ As a country we must find solutions to handling SNF with the utmost safety, and we can only achieve that together with understanding, science, and transparent regulatory judgment. Local, state, federal, industry, and advocacy entities must foster effective dialogue among stakeholders surrounding all U.S. reactor sites, at proposed disposal repository locations, and along transportation pathways to ensure transparent conversations that lead to solutions.

Abandoning SNF at over 65 sites in 30 states puts the health and safety of people and the environment at risk for generations. Engaging in

trusting, transparent, and data-driven dialogue will advance solutions across regions through an independent and civil process. This national conversation will help to ensure all concerns are heard and through the exchange of ideas will lead to significant improvements in containment, storage, and disposal of SNF.

13. Congress should consider legislation that restricts NRC from approving canisters with a design life of less than 100 years. (Finding L, M)

The current state of U.S. SNF storage at reactor sites requires a long-term vision for more than 100 years. Congress must work with the NRC to ensure that thousands of canisters are not approved and then stranded on-site beyond their design lifespan.

The selection of a canister storage system with 5/8-inch walls may have seemed theoretically reasonable for a temporary storage period, but they are completely inadequate for the anticipated on-site storage of over 100 years and subsequent transportation off-site.⁷⁵ Our leaders must ensure that on-site containment is robust and long lasting, as little progress has been made on any interim storage or permanent disposal facility.

NRC is charged with regulating the safe operation of nuclear power plants and protecting the health and safety of people and land surrounding nuclear power plants, but their licensing approvals do not reflect the discrepancy between the interests of DOE and nuclear power plant owners. DOE requires that canisters are undamaged before transport to an off-site facility.⁷⁶ Nuclear power plant owners look out for their profit, risk, and stability as a company. A utility company's concern about profit and shareholder interests influence their decision making and has led to errors in judgment.

Congress must be held accountable for budgeting adequate funding for SNF storage, disposal, transport, and research and development. It is imperative that radiation containment canisters with a lifespan of less than 100 years are not approved by the NRC. This selection criteria ensures that the best and most long-term storage canister selection is made with consideration paid to indefinite on-site storage and transportation.

14. Congress should consider legislation requiring the NRC to create capitalization minimums for businesses applying to purchase nuclear power plants in decommissioning. (Finding N)

While nuclear power plant owners have committed errors of judgment and action, we see even more risk potential from companies which lack the experience and financial reserves to manage a nuclear plant in decommissioning. This process of transferring responsibility to private companies requires thorough evaluation of necessary technical, financial, and regulatory expertise. The NRC transferring ownership of nuclear power plants to companies lacking verified qualifications and capitalization minimums has the potential to put people and the environment at risk.

If left unchecked, these inexperienced companies may pose a larger risk to long-term SNF storage than the current status quo because of their speed, undertrained workers, gaps in knowledge, and inability to financially support operations or project delays.^{77,78} In a commitment to best practices, Congress and the NRC should continually ask the question of, “who is best prepared to handle and steward SNF for generations?”

15. The NRC should use its existing regulatory authority to require permanent on-site inspector roles at nuclear power plants while the plant is in the fuel handling and movement phases of decommissioning. (Finding O)

Independent and objective regulatory oversight is critical for safety during handling and transfers of SNF. Additional independent investigators are necessary to monitor the procedures on-site and to detect issues in handling and radiation exposure. The NRC’s pattern of accepting utility reports and allowing the utility to “self-regulate” do not meet the stringent health and safety mission they are charged with in their mission.

16. Congress should encourage collaboration on best practices between military and civilian SNF handling authorities. (Finding P)

The civilian nuclear handling procedures are significantly weaker than the military handling procedures. Members of Congress can develop relationships with top military leadership and connect them with nuclear power plant leaders in their districts to create a framework to share military best practices in handling nuclear material in order to protect U.S. national security and resources. Many nuclear plants are within close proximity to military bases and national treasures, and for this reason, the military has a large stake in preventing a civilian nuclear failure. The strong safety history of military handling of nuclear material should lend several transferable applications to the deficient civilian nuclear power industry.

17. The NRC should conduct a review of international practices related to storage of SNF inside hardened, enclosed buildings. (Finding Q)

Other countries, like Switzerland, construct hardened facilities where they handle SNF, and also where they may repackage SNF if there is damage or concern.⁷⁹ In addition, these countries also use canisters which can be inspected, monitored, maintained, and repaired.⁸⁰ These basic criteria are not in place at most U.S. nuclear power plants. Having a hardened building where SNF is handled provides another layer of protection against radiation exposure to the environment.

CONCLUSION

The U.S. NRC has not lived up to its original mandate to protect public health and safety. This report has defined many pitfalls in NRC's management of SNF. There are several initiatives which can improve the current state of on-site SNF storage in the near term if public agencies and leaders better coordinate efforts. A renewed commitment to the SNF storage scope and role of regulators, agencies, utilities, and Congress would improve outcomes immediately, especially when paired with specific safety criteria for SNF storage and full-time, on-site inspectors.

The creation of a Nuclear Waste Administration would provide a much needed focus on the long-term radioactive waste storage problem across the nation. Solutions have potential for more success when science is combined with the lived experience of people surrounding nuclear power plants. These robust national conversations would increase public trust when tied with specific outcomes and structured in the consent-based framework of the Blue Ribbon Commission.

Currently, utilities exercise too much influence over state and federal regulators. Congress needs to exert their leadership on the SNF issue by strengthening legislation; commissioning a Nuclear Waste Administration; preventing unqualified companies from buying plants in decommissioning; and defining collaboration between military and civilian nuclear handling operations. Most importantly, Congress must

consistently budget adequate funding for the storage, disposal, study, transportation, and construction of a permanent repository. It is time for the U.S. to live up to our reputation as a leader in SNF management. Our lack of progress on SNF storage and disposal is a weakness and poses great risk to our economy and national systems of food, water, transportation, and security. The SNF storage and disposal crisis needs to be addressed immediately. Otherwise, the associated costs and consequences could come to dominate the U.S. economy through contamination of land, water, air, and genes of future generations.⁸¹

Enough time has passed with the use of nuclear power to illuminate the blind spots of the regulators, utilities, nuclear industry, elected officials, and residents. Now the challenge is for leaders to address and plan for the safest storage and disposal available today, with continual improvements applied as technology advances – that means thicker-walled casks. Nuclear energy is a technology that brought much hope and promise to diversify our energy grid, and we have seen great disappointment with the absence of balanced leadership for safety, common sense, and transparency in dealing with the SNF and nuclear power plants in decommissioning. The U.S. must take this opportunity to pause, reflect, and use all knowledge available to affect a new SNF policy before a catastrophe.

STORAGE AND AGING MANAGEMENT

FINDINGS AND RECOMMENDATIONS

INTRODUCTION

The Storage and Aging Management Policy Committee analyzed the technical evidence for the storage, monitoring, inspection, reporting, repair, handling, and aging management of SNF at SONGS. Our members focused recommendations on the transition from wet storage in SNF pools to dry storage in steel canisters with 5/8-inch walls, and the necessary preparation required for failures and deficiencies in storage sites. After the SNF cools for a number of years in SNF pools at reactor sites, the fuel assemblies can be placed into a variety of dry storage canisters that the nuclear power plant owner chooses. Those canisters are then placed on-site for storage, typically on either a parking lot-like platform or within a storage vault that is partially below grade.

The U.S. was unprepared for SNF storage when it began experimenting with nuclear power in the 1950s. Today there is still no interim or permanent SNF facility built and approved. Therefore, U.S. nuclear power plant operators are forced to store and manage SNF on the site of reactor facilities at over 65 power plant sites in 30 states. This on-site storage situation is how SNF is to be stored in the U.S. indefinitely. Those same nuclear power plant owners are unprepared for long-term storage, and their staff are undertrained in safety and handling procedures.⁸²

Storage concerns are mounting, and many are questioning utility choices in storage materials, siting of SNF at reactors, and the fate of our SNF in this century and beyond. Most utilities made their storage site and canister selections based on federal agency timelines for a permanent

disposal facility, and those deadlines have passed by decades.⁸³ The risks are increasing as sea levels rise, fires and floods intensify, and storm ranges expand. The storage decisions were made based on outdated data, and the U.S. is not prepared to address deficiencies and damage at storage sites because no transfer stations and no repackaging/replacement procedures are approved nor tested on fully-loaded storage canisters.⁸⁴

The NRC enacted regulations which require “an aging management review of containment structures to ensure the effects of aging will be managed so their intended functions will be maintained for the period of extended operation.”⁸⁵ These vulnerable on-site storage configurations are intended to be stewarded through individual aging management plans proposed by utility owners, which consider storage timeline, cost, and uncertainties. As of yet, these storage plans and subsequent aging management plans are only now being released and have not stood widespread, independent scrutiny or the test of time.⁸⁶ More research is needed to understand how SNF storage sites can be engineered to be climate resilient and climate ready, and also to define the true risk of radiation exposure from dry cask storage, over decades.

These policy recommendations were developed after careful review and analysis of Task Force Technical Committee reports, NRC documents, international nuclear agencies, and the latest scientific articles and books on SNF storage.

FINDINGS

R. Pursuant to current law, DOE is required to take ownership of SNF canisters for permanent disposal.

The NWPA requires the DOE to take ownership of SNF for off-site transfer to a permanent disposal facility.⁸⁷ The U.S. has no successes in the siting, approval, construction, and operation of a permanent disposal facility for SNF. The deadline to construct a repository jumped from 1980 to 1998 to 2009 to 2048.⁸⁸ In 2014, the NRC even acknowledged the reality that SNF will be stored at reactors indefinitely, if a geologic repository does not become available.^{89,90}

This lack of urgency, adequate funding, and tangible progress demonstrates an inability to meet deadlines on the parts of government agencies, nuclear power plant owners, and Congress. In fiscal year 2020, Congress allocated \$25 million to DOE programs related to integrated SNF management systems, but the money does not come with specific Congressional direction on spending and it is insufficient to make substantial progress on SNF storage, disposal, and transport.⁹¹

S. Most on-site SNF storage systems are above ground, on parking lot-type pads, where the storage canisters are each covered in a concrete overpack.

When all SNF at SONGS is moved to dry storage, there will be 123 canisters of SNF stored on-site, including 73 canisters in the newer Holtec facility and 50 canisters in the Orano-TN NUHOMS system (Orano was previously known as AREVA). The Holtec UMAX system is a newer design of storage system which is partially below grade, with the canister vents at the surface of the land. Concrete is poured around steel silos that the storage canisters are then lowered into. This style of concrete storage system is only used at two sites in the nation: SONGS (CA) and Callaway (MO).⁹² This style of partially below grade on-site storage system is a new storage configuration design. Experts have identified serious flaws in recent years: gouging and scratching upon downloading, potential for clogging of vents, and misalignment risks upon downloading.^{93,94}

At SONGS, the storage system is buried partially below grade in unstable sandstone bluffs that are susceptible to some of the highest rates of erosion



This image demonstrates the difference between the above ground storage system and the partially below grade system.

Image: Samuel Lawrence Foundation

on the California coast.⁹⁵ There is a documented history of natural and man-induced erosion and landslides along the coastal cliffs surrounding SONGS.^{96,97,98} The sea wall, which provides a buffer between the ISFSI and wave action, has its foundation in the fragile bluff and is also vulnerable during high-erosion events.⁹⁹

These partially below grade storage systems add risk factors of scratching and gouging upon downloading of canisters, questionable canister and SNF retrievability, and prevent ASME-qualified inspection, monitoring, and repair.¹⁰⁰ The inability to detect radiation releases, damage to canisters, or damage to SNF geometry in below grade dry canister storage systems cause serious concerns.

T. There are instances of metal-to-metal contact between steel storage canisters and the storage vault liner when employees download canisters into the partially below grade storage system.

This contact between storage canisters and other materials inside the storage vault have caused scratching and gouging, and present potential sites for chemical corrosion.¹⁰¹ The only visual assessment of storage canisters method performed by SCE included a camera and a borescope, technology which takes no direct measurement but captures photos and makes a computer model of photos.¹⁰² This is an inadequate method of identifying canister damage and it does not qualify as an inspection.¹⁰³ It also lacks adaptive management for the root cause of scratching and gouging of canisters.¹⁰⁴

U. The 2018 FSAR did not address ISFSI air vent blockage and cessation of canister passive cooling via flash flood, tsunami inundation, or landslide.

The FSAR for SONGS did not address several risk scenarios.¹⁰⁵ The land surrounding SONGS has a demonstrated history of landslides and tsunami.¹⁰⁶ A recent economic report poses

substantial losses if radiation contaminated air, land, and water in Southern California.¹⁰⁷ This lack of depth on the FSAR is a serious fault and an oversight that needs to be mitigated immediately.

V. The repackaging/replacement procedure for damaged canisters or damaged fuel is underdeveloped.

The discussions which pushed for removal of fuel assemblies from the SNF pools did not sufficiently consider the damage over time to dry storage canisters and SNF during on-site storage.¹⁰⁸ This lack of forethought stranded thousands of storage canisters at reactor sites around the nation without a plan for dealing with a canister breach. Most canister models used in the U.S. are thinner-walled and have only one layer of defense between radioactive material and the environment.

The lack of a viable repackaging/replacement procedure leaves no ability to handle or contain radiation if an act of malfeasance or material failure lead to canister or fuel damage. Nuclear power plant owners spoke on record that they do not have a repackaging/replacement procedure and nationally the procedure is underdeveloped, untested on canisters fully-loaded with radioactive material, and has not been implemented at nuclear power plants.¹⁰⁹

W. SCE does not have an optimal and qualified long-term plan for inspection, maintenance, monitoring, or repair procedures.

Currently, SCE has not implemented an adequate damage detection and inspection protocol nor have they tested their protocols on loaded canisters.¹¹⁰ The precise detection and mitigation of damage to canisters and SNF is necessary to prevent radiation exposure to the environment.¹¹¹ The March 2019 visual assessment conducted by the NRC was not an ASME-qualified inspection method.¹¹² The utility's choice of storage canisters and storage facility prevents the inspection, maintenance, monitoring, or repair of the only

defense of containment between the environment and high-level radioactive waste.¹¹³ This is of serious concern because on-site storage of SONGS's SNF is expected for an indefinite period of time.

Currently, industry and the NRC are performing research and development programs on repair processes for dry cask storage systems of all kinds. At the CCC hearing on October 17, 2019, SCE presented a proposed process for in-situ repair of stainless steel canisters. Follow-up validation including vendor certification, ASME approvals, and NRC approvals are required before these procedures are considered verified.

X. The current method the NRC uses to calculate risk – risk triplet method and risk-tree analysis – does not sufficiently quantify risk.

The risk triplet method and risk-tree analysis used by the NRC to quantify scenario consequences is a flawed approach because it is missing risk

scenarios and does not give a full scope of the risk due to the multiplicative properties of the equation.¹¹⁴ This method of risk analysis does not demonstrate true risk. For example, one low outlier probability multiplied by another, higher risk probability can make the risk seem neutral.

In the absence of an accurate risk calculation, SCE often misrepresents comments made in previous NRC investigations. SCE staff often make claims of, “zero risk,” when the true answer is that SCE does not know the true, precise risk of radiation exposure from dry cask storage, over decades.¹¹⁵ When SCE uses evidence out of context, they both misconstrue and extrapolate to situations beyond the scope of the original regulator's comment.^{116,117,118} There is risk in dry cask storage, and much of the risk and impact of material degradation and loss of cooling due to natural disasters is unknown and currently undetectable while SNF is stored in the current canisters and storage system, partially below grade.¹¹⁹



Image: Southern California Edison

Y. There is no ability to detect chemical damage to SNF in current dry storage configuration.

Hydrides formed on the zirconium alloy cladding of fuel pellets reorient themselves as the material cools in canisters, causing degradation of cladding.¹²⁰ When hydrides reorient radially the material becomes brittle and ductility decreases causing damage to the fuel and radiation leaks inside the canister.¹²¹ Different factors affect the reorientation of hydrides in each canister.¹²² Cladding failure is a major issue changing the composition of SNF inside a canister, likely complicating transport off-site.¹²³

Z. The high accessibility and visibility of the site leaves it extremely vulnerable to an act of malfeasance.

Today, two separate ISFSIs exist at SONGS. The newest, built by Holtec, is located about 100 feet from the Pacific Ocean on the 85-acre grounds of SONGS. The property is part of Marine Corps Base Camp Pendleton and is owned by DON. Two of the nation's busiest transportation corridors – Interstate 5 and the Los Angeles-San Diego-San Luis Obispo Rail Line – flank the site. The ISFSIs are clearly visible in Google Earth images and in numerous published photographs.¹²⁴

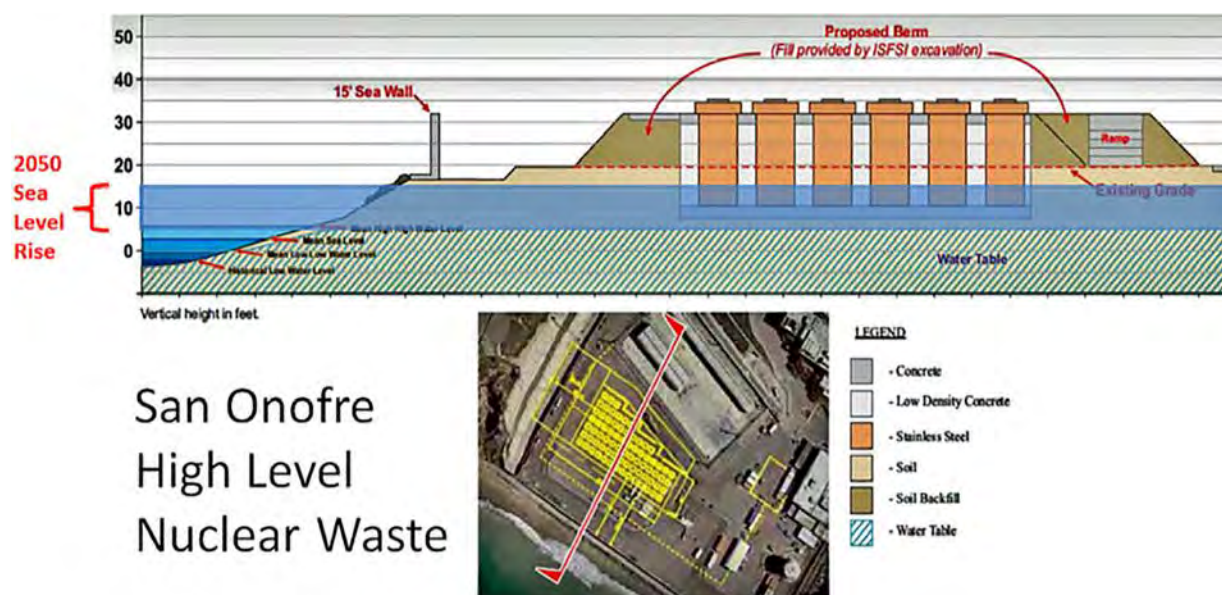


Image: Samuel Lawrence Foundation

RECOMMENDATIONS

18. Congress should work with DOE and industry to authorize and develop a program that incentivizes SNF storage innovation through research and development to discover alternate ways to isolate nuclear material from humans and the environment. (Finding R)

Dry cask storage technology is not improving at the same pace as the growing volume of SNF. To meet the technical challenges of SNF storage into the future, we need a large and urgent research and development campaign which focuses on the study of storage materials, transportation logistics, and siting of repositories. These DOE research efforts need to receive full funding from Congress year-after-year to ensure their success in the national issue of SNF storage.

SNF storage has seen slow innovation since the use of civilian nuclear power began in the 1960s. The NRC decision for on-site SNF storage in dry casks was made in the early 2000s on the premise that a permanent repository would be open, and SNF would not remain at reactor sites for long. The consequences and costs of operating a nuclear plant and managing the storage of SNF compound as time goes on.¹²⁵

19. Members of Congress should create a Spent Nuclear Fuel Caucus to discuss SNF storage, disposal, and transportation issues. (Finding R, W)

SNF is a common problem affecting the nation, and currently there is no congressional coalition which collectively makes decisions to advance the safest storage and disposal of SNF in the U.S. It is essential that Congressional members engage in regular dialogue and decision making to improve the storage, transport, and disposal methodologies to ensure best practices.

20. The DOE and nuclear power plant owners should reach a consensus on which canister and storage system to use for storage of SNF and apply jointly to the NRC for the license. (Finding R, S)

Nuclear power plant owners have different interests than the DOE. Investor-owned utilities, like SCE, must manage their shareholder interests. SCE chose a dry cask and storage system which may not maintain the integrity of canisters in the decades it will take to construct an interim storage or permanent disposal facility. The DOE's interests focus on receiving undamaged canisters, prepared for transportation to an off-site repository. If the DOE is not involved in the canister and on-site storage facility selection, then the nuclear power plant owner may choose a storage configuration which only suits their bottom line and strategy to reduce cost of containment, staff, and maintenance.

The nuclear power plant owner at SONGS selected canisters with a design life of sixty years. This means our storage situation at the reactor may last sixty years, but early reports of scratching and corrosion have raised doubts.¹²⁶ There is significant uncertainty about whether the canisters in use can even be transported given the physical damage already evidenced. Poor choices in canisters and storage facilities were made by utilities based on broken promises of permanent disposal made by the federal government.¹²⁷ Today, utilities place blame on anyone but themselves, even though utility owners could have chosen stronger storage canisters and better storage locations.

DOE's efforts to design a universal MPC system failed in the late 1990s due to a lack of repository designs and was re-engaged in the early 2000s under the Transportation, Aging, and Disposal (TAD) initiative.¹²⁸ The DOE needs to be an

active participant in canister selection if there is to be successful containment of SNF radiation from people and the environment.

The roadblock of utility players not wanting to spend money on buying quality casks needs to be mitigated through state and federal regulation. This requirement should apply to new canister applications and the canisters used to repackage/replace existing SNF in dry storage.

21. Congress should request that the National Academy of Sciences conduct a thorough report assessing the following: the long-term risks of dry canister storage in below grade facilities; hydride reorientation of cladding in SNF storage; verification of damage detection, inspection, and repair methods; feasibility of repackaging/replacement procedure; and risk assessment of on-site storage of SNF. (Finding S, T, U, V, W, X, Y)

The consequences of storing SNF on-site at reactors is understudied. This storage arrangement produces substantial risk to SNF and storage materials. It is imperative that science advances regularly to keep pace with best practices in containment.

The current research, licenses, and generous NRC license exemptions do not accurately address the increasing risks of sea level rise and climate change. The NAS study should examine the emerging risk factors for below grade storage arrangements, hydride reorientation of SNF cladding, verify proposed canister damage detection, inspection and repair methods, feasibility of repackaging/replacement procedure, and produce a thorough risk assessment of indefinite on-site storage of SNF. This report would provide stakeholders with an independent and scientific assessment of current risk and define detailed mitigation actions for storage technology.

Inspection protocols are critical for continued on-site storage. Special attention should be paid to

inspect the bottom of canisters, monitor radiation signatures, and detect fuel geometry changes and hydride reorientation inside the canisters (i.e. x-ray detection). If a technical committee finds that canisters in-use cannot be inspected or repaired according to qualified standards and ASME codes, then Congress must require those canisters be replaced with storage casks which meet these fundamental safety standards to protect health and safety.

22. The nuclear power plant owner and the NRC should conduct an FSAR study to mitigate loss of passive cooling in ISFSI via air vent blockage and inundation with water from rain or coastal flooding, or sand and silt from a landslide. (Finding U)

This follow up report is well within the scope of continued storage on-site and is necessary to validate the current storage license.

23. Congress should require the DOE and nuclear power plant owners to develop a technical procedure for canister repackaging/replacement prior to further NRC canister license approval, SNF pool decommissioning and removal, and loading of canisters in an on-site ISFSI. (Finding V)

There is no permanent repository approved. The nation must prepare for damaged SNF canisters which require mitigation. This repackaging/replacement procedure would ensure that all DOE criteria are met for eventual transportation of canisters off-site when a repository is available to accept SNF.¹²⁹

24. Congress should require the NRC to implement a new method of conducting a failure mode and risk analysis to determine the risk probability number, a more accurate measure for each risk factor. DOE and NRC should cooperate in this risk assessment process. (Finding X)

This change in models would capture the true risk

and inform how to manage the aging of SNF by identifying the highest risk event.

25. The SNF at SONGS requires a storage configuration with more levels of redundancy and must be moved to a technically defensible storage facility to reduce threats. From a security standpoint, the SNF should be moved further away from the coastline. (Findings T, W, P)

Given the uncertainty that San Onofre's spent fuel will be able to be moved to a national facility prior to 2035 (the date at which the coastal development permit will require Edison to apply for an amendment to retain, remove, or relocate the ISFSI) and even 2051 (the date at which the coastal development permit will expire), consideration should be given to the prospect of local relocation of the SONGS ISFSI to a higher elevation nearby, further from the ocean, where it could be better protected.

SNF should be placed into canisters with several layers of redundancy that can be monitored, inspected and repaired, and they should be moved to an acceptable storage facility at a significantly higher elevation.

If the SNF at the two ISFSIs at SONGS is repackaged/replaced then moved to a technically defensible storage facility on higher ground, the problems of ocean water and ground water

intrusion can be avoided. The SNF would also be better secured from an act of malfeasance.

26. Congress should budget adequate funding annually to ensure proper and comprehensive emergency planning measures are in place for all surrounding municipalities to implement for the safety of their residents. (Finding Z)

Currently, as referenced earlier in Finding #A, there is a local network of municipalities within a 10-mile radius of SONGS called the IPC which meets monthly to review emergency planning procedures. There is a concern, however, that these plans may not be adequate for any type of full-scale radiation disaster in the area, and the eight million people in the 50-mile radius may not be adequately protected against harmful exposure to radiation in such an event. This is a critical factor in the overall protection of the community and its members and needs to be significantly enhanced.

27. Congress should work towards a consent-based final disposal site including prioritization for sites with higher risk of sea level rise, high population density and high potential for seismic events, including as envisioned under the Spent Fuel Prioritization Act (H.R. 2995). (Findings U, X, Z)

CONCLUSION

Government agencies, utilities, and legislators across the U.S. are woefully unprepared for the aging management of SNF, especially during the time SNF is stored on-site at reactors. The preoccupation with risks of operating reactors has led to policy gaps in the global knowledge base about dry storage over decades. Those policy gaps result in a nuclear industry and nuclear regulator

that depend on risk analysis methods which lack depth and assume the best-case scenario because SNF is not in an active reactor.

These poorly founded assumptions are further complicated by the absence of several best practices in risk assessment. The NRC's decisions lose value when they do not accurately

represent risk. Currently the NRC lacks the following critical risk assessment technologies and methodologies: independent risk analysis of dry cask storage in partially below grade storage, mitigation strategies for ISFSI air vent blockage and inundation with water or sand/silt from a landslide, technical canister repackaging/replacement procedure, qualified procedures for inspection, maintenance, monitoring, and repair, failure mode and risk analysis methodology, visual detection of fuel geometry inside canisters, among other serious concerns. All of the aforementioned recommendations must be implemented at the NRC to improve the risk assessment of SNF in dry storage.

Serious concerns raised as findings in this committee are followed by recommendations which can be enacted immediately. At SONGS, we expect the SNF to remain on-site indefinitely, and it is imperative that the storage configuration is resilient to natural conditions and human error. The lack of qualified inspection standards, and a verified repackaging/replacement procedure for canisters is an incredible oversight on the part of Congress and NRC. Each of these risks will only intensify as storage time increases.



Image: Southern California Edison

SAFETY AND HANDLING

FINDINGS AND RECOMMENDATIONS

INTRODUCTION

The SONGS Task Force technical analysis team considered nine separate questions regarding Safety and Handling at SONGS.

The recommendations made here are based upon the team's findings.

FINDINGS

AA. The decision of the NRC to allow SONGS to disable the alert and notification system has created significant public concern.

NRC analysis determined there is no credible scenario that would result in the release of radiation at SONGS beyond the area boundary. Therefore, there was no need to maintain the public warning system. An operating reactor emits a tremendous amount of heat when first shut down, sufficient to volatilize isotopes such as Cesium-137. Furthermore, water is used to cool the SNF. If the water is not cooled sufficiently, the water (and cesium) can turn into a vapor, and be transferred off-site, if not otherwise contained. SONGS SNF lacks the heat to volatilize (e.g.) Cs-137, and there is no water in a dry storage canister to create a plume.¹³⁰

Public confidence is a critical aspect of consent, whether interim or long term. Public concern about the lack of a warning system has been expressed repeatedly at SONGS Community Engagement Panel meetings and at large.

BB. Lack of sufficient training and qualification requirements for canister handling were major factors in the August 2018 download incident.

Human performance appears to be the major contributing factor in the canister download incident of August 2018. Prior to the August 2018 incident, the training did not use a systematic approach. Since the August 2018 incident, both Holtec and SCE have revamped their training and qualification requirements to address the gaps in their program.¹³¹ However, an overarching factor still seems to be the lack of detailed regulatory guidance in the Code of Federal Regulation, 10 CFR 72, regarding the training and qualifications of personnel at an ISFSI.¹³² On Subpart I [Training and Certification of Personnel, 10 CFR 72.190, 192 and 194] of PART 72—LICENSING REQUIREMENTS FOR THE INDEPENDENT STORAGE OF SPENT NUCLEAR FUEL, HIGH-LEVEL RADIOACTIVE WASTE, AND REACTOR-RELATED GREATER THAN CLASS C WASTE only touches on the topic. The above three sections of Subpart I merely state goals, i.e. “must be limited to trained and certified personnel”, “shall establish a program for training, proficiency testing, and certification of ISFSI or MRS personnel” and “physical condition and the general health of personnel...must not be such as might cause operational errors...”

CC. Improper and inadequate equipment and technology were other major factors in the August 2018 download incident.

Root causes of this mishap were inadequate training of the crew and the improper and inadequate equipment and technology available to the crew to perform its task. A drop-restraining system was not in place when the canister was

about to fall. During the downloading operation, the canister system was not visible to the crane operator. There was no guide system for downloading and the crane operator was verbally instructed by the downloading crew. Holtec was not prepared for this kind of accident and thus a mitigation policy was not in place.¹³³



Image: Southern California Edison

RECOMMENDATIONS

28. The NRC should consider requiring SONGS to reenable the alert and notification system because the costs or downsides are far outweighed by its benefits. (Finding AA)

Around eight million people live within fifty miles of SONGS. With fifty sirens strategically placed within ten miles of SONGS, the system provided reliable, prompt notification to the public in the event of an emergency. Although the reactors are now quiet, there is public fear that the 3.6 million pounds of SNF stored at SONGS, in an area bounded by two earthquake faults and one hundred feet from the ocean, still threatens population and peace of mind.¹³⁴ SONGS was never intended for long-term SNF storage, but given that no viable long term storage site currently exists, it is apparent that the cities surrounding SONGS need a way to assure their citizens that they are safe and protected in the event of a catastrophe. The costs of bringing the system back online can be paid for. Public confidence is priceless.

29. Congress should consider legislation to require the NRC to establish a new detailed quality and training program for all ISFSI personnel as an element of ISFSI licensing. (Finding BB)

The new standards should establish an independent training organization to implement the program with elements to include:

- a. Testing administered to determine passage or failure of training.
- b. Retraining requirements and timelines.
- c. Conduct unannounced inspections and/or testing of personnel.
- d. Record keeping requirements to document personnel issues, i.e. complaints, disciplinary procedures, disciplinary proceedings against specific personnel, specific personnel's involvement in incidents concerning safety, etc.

and make those records open to the public at any time for inspection and copying.

- e. Specific roles, requirements, qualifications and training for a loading "team".

30. Congress should consider legislation requiring ISFSI licensees to utilize additional equipment and technology for canister loading. (Finding CC)

Such items must include:

- a. Sufficient numbers of appropriately designed cameras positioned appropriately to enable downloading operator to view entire operation in real time so operation can be adjusted or halted as necessary for safety.
- b. Installation of a contact sensor to avoid any metal to metal grinding.
- c. In the event of any detected metal to metal grinding, direct measurement of any surface irregularities resulting from download grinding.
- d. Establish maximum acceptable depths of metal to metal grinding during download operation.
- e. NRC official present at all times during all loading operations.

ALTERNATIVE VIEWS

COMMENTARY AND DISSENTING STATEMENTS

Nina Babiarz:

1. ***Federal Legislation and Regulatory Oversight Introduction should precede with a statement buried in Pg. 17 of State Policy section; “Because of the threats of NRC federal preemption on health and safety matters relating to radioactive material and due to the threats that spent nuclear fuel storage poses to our community and coastal environment, the San Onofre...”*** (after all isn’t that the ultimate and overarching crux issue between Federal and State authority @ SONGS?)
2. **Page 21, Conclusion of State Policy Section, paragraph that begins with: “Two risks loom large...” should be preceded by: ‘Due to the absence of an independent professional risk assessment and analysis, two risks, among many others, loom large...’**
3. Best Practices:
 - a. Pg. 34 relevant to **‘The 2018 Final Safety Analysis Report (FSAR) did not address the ISFSI air vent blockage and cessation of canister passive cooling landslide.** A sentence that should follow

a serious fault and an oversight that needs to be mitigated immediately.’ Is: The NRC’s irresponsible suppression for ‘proprietary’ purposes of the FSAR detailing

millions, should also be included in that mitigation.
4. Storage and Aging Management; ‘Special Conditions’ as amended to the CA Coastal Commission (CCC) permit issued SCE on October 6, 2015; A request for a current status as to whether SCE is actually in compliance with the permit should have been secured from the CCC since the evidence shows, by Edison’s own written admission right in their CA Coastal Commission permit application, that the ‘examination techniques and remote surface inspection tools are still “under development” and that ‘their utility for the maintenance and monitoring of the spent fuel casks has not yet been demonstrated...NOR is it clear when these techniques, tools and standards would become available for use at SONGS.’ If SCE is not in compliance with the CCC permit issued, a ‘Recommendation’ in this Section would be to call for revoking SCE CCC permit to bury the waste until a system to validate the structural integrity of the cans can be achieved.
5. Safety and Handling; I am one of many who shared Admiral Hering’s concerns expressed on our last teleconference regarding 2-1/2 pages (Pg. 46-48) of recommendations with no funding source; empty vessels with no direction. A few that stand out that could and should be paid for by SCE’s current DTF with the exception of #37 (warning systems); SCE
 - a. Priority issue of ‘criticality’: Combine and Move #44 and #45 to the very front of the line. SCE should be accountable for opening the demo cask for a determination of the current status of the cladding performance

- b. #33 – “Hot Cell” should be procured and in place prior to the demolition/removal of the Spent Fuel Pools (SFP)
- c. #37 – ‘Any potential costs of bringing warning system back online: Southern California Edison should burden that cost since they made the premature decision to remove and repurpose prior to the need for them expiring.
- d. #47 before calling for national standards, require NRC (Greg Warnick’s) accountability of the ‘issues’ addressed in the NRC’s August 20th SONGS update to the public since the resumption of the burial in July 2019; SCE/Holtec’s **inability to effectively develop and implement the NRC corrective actions required**. NRC should have required SCE/Holtec to report these incidents as an NRC demonstration of **enforcement**. Instead NRC retroactively altered the procedures to accommodate SCE **inadequate adherence to NRC corrective action procedures**. Those ‘issues’ were an obvious violation of SCE’s NRC’s ‘corrective action’ and a clear demonstration of the NRC’s inability and/or unwillingness to regulate the utility industry; See attached.

Malcolm Bund:

Page 9 SONGS is located on Camp Pendleton, not next to it.

Either the ISFSI is a known issue or will it survive until 2050? SONGS, from SCE/Holtec perspective, was never meant to be a permanent home for the SNF.

Page 12 Rec 4. Are we sure that Finding F covers this state rec????

By the time we arrive at Page 10 we have had 5 references to the SONGS location. Is that what we want? Suggest review and revise.

Page 13 last para in Finding H: this para assumes that SCE sees the need to repackage which they don’t. But as there is a requirement under the NWP law for canister inspection and maintenance both SCE and NRC have mistakenly proceeded and the whistle needs to be blown.

The point we should be making is NRC has repeatedly neglected their responsibility to follow the NWP law and has sided with management in violation of laws. Why isn’t the Task Force holding the NRC responsible as regulators and upholding their responsibility?

N page 23

We keep arguing that undercapitalized companies are buying decommissioned plants without ever being able to prove that the companies are undercapitalized. The selling utilities are stepping away from the challenge of disassembling Nuclear plants but we don’t know if they are side stepping the liability issues. THE ARTICLES QUOTED SAY NOTHING ABOUT THE CAPITAL STRUCTURE OF HOLTEC OR OTHER CLEAN UP COMPANIES. WE ARE SPECULATING HERE ABOUT CAPITALIZATION. I THINK THE QUESTIONS are: WHY ARE THE UTILITIES NOT OUT SOURCING THEIR RESPONSIBILITY RATHER THAN SELLING THEIR OBLIGATION? What obligations are the Utilities walking away from and what are they keeping? If the clean up fails then who is responsible to complete the work? What is Holtec paying for the pleasure of the clean up challenge?

S on Page 303 and T on page 32 and W on Page 35 Again, how do we know the canisters are scratched especially if we keep saying the canisters can’t be inspected!!!!

U on page 34 when was the last reported tsunami in the SO area??? Most everything in the last section beginning page 42 is redundant.

Katie Day and Angela Howe, for The Surfrider Foundation:

The Surfrider Foundation does not sign on to the entirety of Section 2 State Legislation; Recommendations 14, 20, and 25; and the Introduction and Findings U, X and Y of Section 4 Storage and Aging Management

Dan Dominguez:

The Honorable Gregory Jaczko, former NRC Chairman
The Honorable Rear Admiral Leendert Hering ret.

Dear Co-Chairs, Messrs. Jaczko and Hering

Thank you for the opportunity to serve on the technical committee for the San Onofre Nuclear Generating Station Task Force. I appreciate Congressman Levin's efforts to initiate discussions at the state and federal level to jump start the process of siting and building a permanent high-level waste repository, or the siting and building of a CIS facility until such permanent repository is built.

However, I have concerns over some of the recommendations of the Task Force Report. I oppose recommendations that could delay or prevent the transfer of SNF to a permanent repository or to a CIS facility or prevent the transfer of SNF from wet storage to dry cask storage, which is inherently safer than wet storage.

I fully support the task force's goal of moving the San Onofre spent nuclear fuel (SNF) to a permanent fuel storage location or to a Consolidated Interim Storage (CIS) location as quickly and as safely as possible. It is for this reason that I will include my name on the report if it is annotated that I have submitted an alternative view and only if this cover letter, along with my alternative view, are included in the report.

Sincerely,

Daniel Dominguez

Federal Legislation and Regulatory Oversight

Letter/Number	Comment
Introduction Section D, delete annotated wording	This led to political stalling and undermined the intent of the NWPA's SNF disposal regime. In the meantime, decommissioned plants are indefinitely serving as SNF storage sites. However, these plants are inadequate storage sites for SNF because they are not built for long-term or permanent disposal.
Recommendations # 2 (pg 11)	In order to address the current failure to give affected communities, states, and native nations meaningful involvement in the maintenance and transportation of SNF within their boundaries, new legislation should grant affected communities consultation and authority relating to the terms on which they would host a SNF facility. Affected states and native nations should be able to adopt additional safety requirements as they see fit.
Recommendations #3 (pg 12)	In order to ensure accountability, the stakeholders and the public should have the ability to obtain information, to require oversight by independent outside experts/inspectors, and to require that these experts issue public findings and recommendations by a time certain. The legislation should require and establish responsibility for public reporting of onsite accidents, near accidents, and remedies. There should be penalties for failure to adhere to the requirements and responsibilities under this legislation.
Recommendations #4 (pg 12)	In order to address critical safety and environmental review concerns, states should have regulatory authority for SNF storage at a

Commented [DD1]: Delete, the site is adequate for storage, it just wasn't built for long term storage.

Commented [DD2]: Vague and not specific enough. Potential to create so many different requirements would delay fuel transfer to a long term storage facility, or consolidated interim storage.

Commented [DD3]: At what severity of the accident or near accidents is the report required. Does it include only fuel related accidents or does it also include industrial accidents? Not specific enough would create confusion on what is reportable and what is not.

owned utilities, like SCE, must manage their shareholder interests. SCE therefore chose a dry cask and storage system which may not maintain the integrity of canisters in the decades it will take to construct an interim storage or permanent disposal facility. The DOE's interests focus on receiving undamaged canisters, prepared for transportation to an off-site repository. If the DOE is not involved in the canister and on-site storage facility selection, then the nuclear power plant owner may choose a storage configuration which only suits their bottom line and strategy to reduce cost of containment, staff, and maintenance.

The nuclear power plant owner at SONGS selected canisters with a design life of sixty years. This means our storage situation at the reactor may last sixty years, but early reports of scratching and corrosion raised doubts.¹²⁷ There is an incredible uncertainty about whether the canisters in use can even be transported with the physical damage already evidenced. Poor choices in canisters and storage facilities were made by utilities based on broken promises of permanent disposal made by the federal government.¹²⁸ Today the utilities place blame on anyone but themselves, even though utility owners are the entity who could have chosen stronger storage canisters and locations. DOE's efforts to design a universal MPC system failed in the late 1990's due to a lack of repository designs and was re-engaged in the early 2000's under the Transportation, Aging, and Disposal (TAD) initiative.¹²⁹ The DOE needs to be an active participant in canister selection if there is to be

Commented [DD27]: Delete. Fallacious argument. All the canisters and associated systems must be approved by the NRC. The utilities can only use NRC approved canisters.

Commented [DD28]: Delete, no basis in fact

	<p>defense between radioactive material and the environment. The lack of a viable repackaging/replacement procedure leaves no ability to handle or contain radiation if an act of malfeasance or material failure lead to canister or fuel damage. Nuclear power plant owners spoke on record that they do not have a repackaging/replacement procedure and nationally the procedure is underdeveloped, untested on canisters fully loaded with radioactive material, and has not been implemented at nuclear power plants.¹¹⁰</p>
Findings # Y	<p>Y. There is no ability to detect chemical damage to SNF in current dry storage configuration. Hydrides formed on the zirconium alloy cladding of fuel pellets reorient themselves as the material cools in canisters, causing degradation of cladding.¹²¹ When hydrides reorient radially the material becomes brittle and ductility decreases causing damage to the fuel and radiation leaks inside canister.¹²² Different factors affect the reorientation of hydrides in each canister.¹²³ Cladding failure is a major issue changing the composition of SNF inside a canister, likely complicating transport off-site.¹²⁴</p>
Recommendations #21 (pg 38)	<p>21. The DOE and nuclear power plant owners should reach a consensus on which canister and storage system to use for storage of SNF and apply jointly to the NRC for the license. (Finding R, S) The nuclear power plant owners have different interests than the DOE. Investor-</p>

Commented [DD25]: Delete. Seems to confuse solid nuclear fuel with liquid nuclear waste. Additionally, the report cited examples of operating nuclear plants, plants outside of the jurisdiction and control of the United States, and drew correlations to a spent fuel storage facility. Their assessment is faulty. The laws of physics do not support the amount of radiation release they proclaim would occur.

Commented [DD26]: Delete. The canisters are filled with an inert gas (helium). My understanding of chemistry is you need a hydrogen atom to form a hydride. There is no hydrogen in the canister.

	canister vents at the surface of the land. Concrete is poured around steel silos that the storage canisters are then lowered into. This style of concrete storage system is only used at two sites in the nation: SONGS (CA) and Callaway (MO). ⁹² This style of partially below grade on-site storage system is a new storage configuration design and experts have discovered serious flaws were discovered in recent years: gouging and scratching upon downloading, potential for clogging of vents, and misalignment risks upon downloading. ^{93,94}
Findings #S last paragraph (pg 33)	These partially below grade storage systems add risk factors of scratching and gouging upon downloading of canisters, questionable canister and SNF retrievability, and prevent ASME-qualified inspection, monitoring, and repair. ¹⁰¹ The inability to detect radiation releases, damage to canisters, or damage to SNF geometry in below grade dry canister storage systems cause serious concerns.
Findings #V (page	V. The repackaging/replacement procedure for damaged canisters or damaged fuel is underdeveloped. The discussions which pushed for removal of fuel assemblies from the SNF pools did not sufficiently consider the damage over time to dry storage canisters and SNF during on-site storage. ¹⁰⁹ This lack of forethought stranded thousands of storage canisters at reactor sites around the nation without a plan for dealing with a canister breach. Most canister models used in the U.S. are thinner-walled and have only one layer of

Commented [DD23]: Reword to include that while these were problems they have since been resolved.

Commented [DD24]: Delete. Not true

Storage and Aging Management

Letter/Number	Comment
Introduction paragraph 4 (pg 31)	The NRC enacted regulations which, “requires an aging management review of containment structures to ensure the effects of aging will be managed so their intended functions will be maintained for the period of extended operation.” ⁸⁵ These vulnerable on-site storage configurations are intended to be stewarded through individual aging management plans proposed by utility-owners, which consider storage timeline, cost, and uncertainties. As of yet, these storage plans and subsequent aging management plans are only now being released and have not stood widespread, independent scrutiny or the test of time, over decades. ⁸⁶ More research is needed to understand how SNF storage sites can be engineered to be climate resilient and climate ready, and also to define the true risk of radiation exposure from dry cask storage, over decades.
Findings # S (pg 32)	<p>S. Most on-site SNF storage systems are above ground, on parking lot-type pads, where the storage canisters are each covered in a concrete overpack.</p> <p>When all SNF is moved to dry storage, there will be 123 canisters of SNF stored on site. Seventy-three canisters in the newer Holtec facility and fifty canisters in the Orano-TN NUHOMS system (Orano was previously known as AREVA). The Holtec UMAX system is a newer design of storage system which is partially below grade, with the</p>

Commented [DD22]: Dry cask storage is inherently safer than wet storage. An example of "...Perfect being the enemy of the good..."

	<p>plant owners look out for their profit, risk, and stability as a company. A utility company's concern about profit and shareholder interests influence their decision making and has led to errors in judgement.</p> <p>Congress must be held accountable for budgeting adequate funding for storage, disposal, transport, and research and development. It is imperative that radiation containment canisters with a lifespan of less than 100 years are not approved by the NRC. This selection criteria ensures that the best and most long-term storage canister selection is made with consideration paid to indefinite on-site storage and transportation.</p>
Best Practices and Recommendations Conclusions (pg 29)	<p>Enough time has passed with the use of nuclear power to illuminate the blind spots of the regulators, utilities, nuclear industry, elected officials, and residents. Now the challenge is for leaders to address and proactively plan for the safest storage and disposal available today, with continual improvements applied as technology advances – that means thicker-walled casks.</p> <p>Nuclear energy is a technology that brought much hope and promise to diversify our energy grid, and we have seen great disappointment with the absence of balanced leadership for safety, common sense, and transparency in dealing with the SNF and nuclear power plants in decommissioning. The discovery of nuclear radiation caused Marie Curie's untimely death, let it not lead to the demise of humanity. The U.S. must take this opportunity to pause, reflect, and use all knowledge available to affect a new SNF policy before a catastrophe.</p>

Commented [DD19]: Would subject communities to increased risk by keeping SNF in wet storage. Dry cask storage is inherently safer than wet storage.

Commented [DD20]: Delete, no proof that thicker-walled canisters are safer.

Commented [DD21]: Delete. Proselytizing, not germane to the charter of the committee to find ways to move the fuel to long-term storage or CIS.

Abandoning SNF at over 65 sites in 30 states puts the health and safety of people and the environment at risk, for generations. Engaging in trusting, transparent, and data-driven dialogue will advance solutions across regions through an independent and civil process. This national conversation will help to ensure all concerns are heard and through the exchange of ideas will lead to significant improvements in containment, storage, and disposal of SNF.

14. Congress should consider legislation that restricts NRC from approving canisters with a design life of less than 100 years. (Finding L, M) The current state of U.S. SNF storage at reactor sites requires a long-term vision for more than 100 years. Congress must work with the NRC to ensure that thousands of canisters are not approved and then stranded on-site beyond their design lifespan. The selection of a canister storage system with 5/8-inch walls may have seemed theoretically reasonable for a temporary storage period, but they are completely inadequate for the anticipated on-site storage of over 100 years and subsequent transportation off-site.⁷⁴ Our leaders must ensure that on-site containment is robust and long-lasting, as little progress has been made on any interim storage or permanent disposal facility. NRC is charged with regulating the safe operation of nuclear power plants and protecting the health and safety of people and land surrounding nuclear power plants, but their licensing approvals do not reflect the discrepancy between the interests of DOE and nuclear power plant owners. DOE requires that canisters are undamaged before transport to an off-site facility.⁷⁵ Nuclear power

Commented [DD18]: Misre presents facts. No one has abandoned SNF.

	<p>Storing canisters inside a closed building would have to be technically evaluated to determine what impacts the building would have on loading operations and canister performance.⁶⁸</p> <p>Buildings enclosing SNF storage would reduce radiation levels at the site boundary to some extent.⁶⁹</p> <p>It is unclear if San Onofre is a good site for a retrofit of a building enclosure.</p>
Best practices Recommendations #13 (pg 25)	<p>13. Decisionmakers should adopt the Blue Ribbon Commission on America's Nuclear Future's recommendation to establish a new facility siting process, establish a new SNF management organization, and broaden support to municipalities affected by transportation routes. (Finding K)</p> <p>The Blue Ribbon Commission provided several relevant recommendations for SNF storage and disposal, and siting of permanent repositories.⁷³ As a country we must find solutions to handling SNF with the utmost safety, and we can only achieve that together with understanding, science, and transparent regulatory judgement. Local, state, federal, industry, and advocacy entities must foster effective dialogue among stakeholders surrounding all U.S. reactors sites, at proposed disposal repository locations, and along transportation pathways to ensure transparent conversations that lead to solutions.</p>

Commented [DD17]: Delete. Radiation levels at the site boundary are at background, you can't reduce levels below background. A building would not reduce radiation levels at the site boundary.

Best practices. Findings #N	<p>N. Undercapitalized non-utility entities are buying nuclear plants in the decommissioning phase.</p> <p>One concerning development involves undercapitalized non-utility businesses applying to the NRC to buy up nuclear plants in the decommissioning phase.⁵³ In the past utility companies were profitable when they ensured safety in their nuclear power plant operations.⁵⁴ Non-utility companies who purchase nuclear power plants in decommissioning often lack the technical expertise and financial resources needed to guarantee successful decommissioning and to safely steward the tons of SNF left on-site.⁵⁵ When non-utility actors purchase nuclear power plants, costs are deeply cut and timelines are often decreased by decades.⁵⁶ Safety goes down in worker safety, environmental exposure, and increases risk of financial exposure for states and average citizens who own assets in the surrounding areas.^{57,58} Companies are attracted to the opportunity to profit, from each nuclear power plant's multi-billion-dollar ratepayer-funded decommissioning money, by taking a minimalist approach to SNF storage.⁵⁹ Currently there are no NRC regulations regarding the purchasing of nuclear power plants in decommissioning, with long-term SNF storage on-site.</p>
Best practices. Findings #Q (pg 25)	<p>Q. Other countries place SNF systems inside enclosed buildings.</p>

Commented [DD16]: Deleted, misrepresents what the referenced article stated.

	decommissioning reserves should be requested from ratepayers.
Conclusions (pg 20)	California must require retrievable and monitorable storage canisters and storage systems, begin a transparent process to identify an interim storage facility within the state, enact a significant state oversight authority on SNF, and codify legislation on SNF storage in the state. States must remain more vigilant to the risks of SNF storage at reactor sites over decades. State agencies must share information among one another prior to approving SNF storage permits.
Conclusions (pg 20)	Two risks loom large over the next several decades. The corporate purchases by Holtec, NorthStar and other non-utility, undercapitalized businesses are a danger to the economy, resources, health, and safety of California and other states. The state must vehemently oppose any efforts for corporate purchases of nuclear power plants in decommissioning. The concerns about SNF retrievability from canisters in the partially below grade storage system also pose serious danger, given the close proximity to the ocean and unstable coastal bluffs. These are actions the state can immediately implement to bolster SNF oversight measures.

Commented [DD13]: Delete, more than likely illegal. Regardless would incentivize utilities to cut costs; which is probably not what we want.

Commented [DD14]: Delete this paragraph. Dry cask storage is inherently much safer than wet storage. This section could delay the movement of fuel into dry cask storage creating increased risk and is counter to the charter of the committee

Commented [DD15]: Delete, assumes facts not supported by any evidence.

Best Practices

Letter/Number	Comment
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	<p>California can serve as a model for the other 29 states with SNF. There are several regulatory oversight actions on SNF storage available to states that have yet to be authorized. Significantly more state oversight is necessary to ensure safety in operations. California should lead the development of a “state’s oversight structure on</p>
<p>Recommendations # 11 (pg 19)</p>	<p>11. The California Public Utilities Commission should require power plant owners to establish funding reserves from nuclear power plant owner resources to cover emergency response to high levels of radiation releases, as long as radioactive material is on site. (Finding J)</p> <p>The potential for high-level radioactive waste contamination threatens California’s natural resources, economy, food, water, health, safety, and transportation. If our communities are exposed to high levels of radioactive contamination the effects would be catastrophic. For these reasons it is imperative that California takes an active role to ensure there is an incentive for safety on the part of the nuclear power plant owner. Establishing funding reserves from the nuclear power plant owner would provide the resources necessary to take immediate action were there to be contamination from natural disasters or acts of malfeasance. No</p>

Commented [DD12]: Delete 6, 7 and 8, dry cask storage is inherently much safer than wet storage. This section could delay the movement of fuel into dry cask storage creating increased risk and is counter to the charter of the committee

information among state agencies should improve the decommissioning decisions made over time. Permits and licenses are approved by the NRC and various California agencies without the utility meeting the permit conditions on the day of approval. The decommissioning permit approvals by the California Coastal Commission in 2015 and 2019 are key examples of a practice where conditions of the permit were impossible to meet upon permit approval; namely special condition 2 (d), “Evidence that the fuel storage casks will remain in a physical condition sufficient to allow off-site transport, and a description of a maintenance and inspection program designed to ensure that the casks remain transportable for the full life of the amended project,” in California Coastal Commission application number 9-15-0228 in 2015.^{37,38} This is a serious oversight on the part of the leaders charged with protecting the interests of the state, its residents and the environment.

8. States must be given authority to conduct oversight of SNF storage. (Finding J) The state has been a recipient of nuclear energy power generation and therefore is responsible for joining in the search for storage solutions. Often state leaders attribute inaction to the federal government, instead of seeing an opportunity for collaboration to expedite solutions. There is a clear opportunity for the State of California to lead the charge for effective engagement between federal and state agencies through economic enforcement, legal challenges to third-party license transfers, increasing state authority, rate regulation, and SNF storage accountability.

nuclear power plant owners and DOE to develop, validate through the National Academy of Sciences, and seek NRC approval for a canister repackaging/replacement procedure. This process should also include study of advanced canister models with the ability to be inspected, monitored, maintained, and repaired. SNF must be accessible for inspection, damage detection, repair, and eventual transport. Canisters must be required to meet the storage license criteria for retrieval. Retrieval is defined here as removal from the ISFSI storage facility and opened for fuel assemblies to be removed from the canisters. If SNF inside a storage canister cannot be retrieved, then new risks and downstream storage issues may become a hindrance to the transportation to an off-site storage facility. A number of initiating factors could create a scenario where a canister and its SNF are rendered irretrievable and lead to radiation leaks, including: natural disasters, acts of malfeasance, or aging-related degradation of fuel cladding, SNF, storage canister, or concrete. SFSI.34 There is no transfer station on site to repackaging/replace a damaged canister.35,36

7. The California Public Utilities Commission, California Energy Commission, California Coastal Commission, and California State Lands Commission, among others, must share information with one another and require only best practices be implemented at storage sites. (Finding I) It is critical that state agencies remain engaged on SNF storage to protect the interests of Californians. The sharing of

	canister repackaging/replacement procedure in the event that a damaged storage canister must be emptied into new and more robust canister system. ^{26,27}
Findings and Recommendations #J (pg 16)	States are reluctant to exercise their authority over SNF storage because of threats of NRC federal preemption on health and safety matters relating to radioactive material. ^{29,30,31} In 2002 the state of California took bold action to regulate low-level radioactive waste with the passage of AB 2214 <i>Low-level radioactive waste disposal facility</i> on September 12, 2002. In 2002 the state of California took bold action to regulate low-level radioactive waste with the passage of AB 2214 <i>Low-level radioactive waste disposal facility</i> on September 12, 2002 thereby amending the California Health and Safety Code. ³² This law set minimum objectives for the design of low-level radioactive waste isolation facilities. Low-level radioactive waste is often material used in medical procedures. ³³
Recommendations #6 (pg 17)	6. The Legislature of California should require those managing nuclear power plants to use easily retrievable and monitorable storage systems. (Finding II) SNF storage canisters are the only containment mechanism preventing radiation exposure to our environment and people. The state must compel

Commented [DD10]: Delete, Speculative, assumes facts that are not supported by any evidence.

Commented [DD11]: Delete, not sure what the point of this statement other than it bolsters my concern about creating a myriad of conflicting regulations. Yes, California passed AB2214 but they never built Ward Valley waste disposal facility due to politics.

	license transfer of Pilgrim Nuclear Power Station to Holtec International, another private business. ¹⁸ If entities fail to have the necessary training, safety protocols, financial capital, and sound financial management, this transfer of corporate ownership could endanger the health, safety, and economic stability of the 30 states which store SNF. ¹⁹
Findings and Recommendations #H (pg 15)	<p>The storage canister model in use at SONGS is welded shut. According to a March 2019 NRC report, these canisters lack the ability to meet the certificate of compliance requirements for inspection, monitoring, maintenance, and repair via ASME-qualified methods.²¹</p> <p>Canisters in use at SONGS are stored in a secondary concrete structure called an ISFSI. There are two of these structures on site, an Areva NUHOMS and a Holtec UMAX. The Holtec UMAX storage system ISFSI is partially below grade and subject to concrete deterioration, atmospheric corrosion, heat damage, and environmental damage.²² The design of the concrete ISFSI prevents the visualization and damage detection of the ISFSI, canisters, and SNF stored within.²³ Damage to the ISFSI structure and storage canisters may prevent the retrieval of the storage canisters and therefore the SNF assemblies inside the canisters²⁴. Only two reactor sites in the nation use the Holtec UMAX Storage system: SONGS (CA) and Callaway (MO).²⁵ The lack of retrievability is further complicated by the fact that SCE has not developed and verified a</p>

Commented [DD9]: Delete misrepresents the NRC report. Specious argument.

	other relevant municipal ordinances should be taken into account for the appropriate siting and transportation of SNF.
Recommendations Conclusion (pg 13)	The time to move SNF off the coast at San Onofre State Beach is long overdue and federal action is needed for a solution. It currently sits in a location that threatens the approximately 8 million people who reside in the vicinity, one of the nation's busiest highways in the I-5 corridor, the country's second busiest intercity passenger rail corridor in the Los Angeles – San Diego – San Luis Obispo Corridor, a military base, the fifth most popular state park in California, and a beloved coastline. Before threats become realities, the federal government must safely move SNF from SONGS to an appropriate final repository. In order to do so, changes must be made to the federal laws and regulations for SNF management. The federal government must ensure that it allows states to meaningfully participate in regulating the SNF that will affect their cities and towns, while continuing to pay close attention to environmental issues. Although there is no perfect solution, keeping SNF at SONGS is unacceptable.

Commented [DD5]: Delete, having every state create their own set of requirements/laws for SNF storage would create a hodge-podge of requirements that would prevent fuel movement. The deleted text would work for any state that created a CIS facility on state land, but this seems to apply to all SNF storage facilities, therefore should be deleted.

Commented [DD6]: Add... or consolidated interim storage facility.

Commented [DD7]: See my previous comment on a hodge-podge of regulations.

State Policy Recommendations

Letter/Number	Comment
Findings and Recommendations #G (page 15)	... third-party and the NRC. ^{15,16} These companies lack the experience and financial reserves to complete these projects safely using best practices. ¹⁷ Maura Healey, Attorney General of Massachusetts, sued the NRC over a

Commented [DD8]: Delete ; misrepresents what the reference article stated.

	<i>consolidated interim storage sites that are on state lands.</i>
Recommendations #4 (pg 12)	<p>Relevant environmental review and protection law should include protection for both land and marine resources. In order to address resource protection, include proximity to a marine protected area as a general factor that could disqualify a site from serving as an SNF repository.</p> <p>Environmental law cannot be curtailed or sacrificed for the sake of expediency. The siting and transportation of SNF must proceed with full review and safeguards for our citizenry and natural resources. Both federal and state environmental laws should be adhered to in the process of siting future storage locations and developing the transportation plan for SNF. In addition to specific land-based ecosystems of national significance that are protected from 13</p> <p>SNF, the same protection should be afforded to marine-based ecosystems of national significance as well.</p> <p>State laws should not be preempted or subordinated due to federal law on SNF storage and disposal. In order to progress and identify acceptable areas for SNF repository siting, there must be meaningful collaboration between state governments and the federal government. In achieving this objective, Congress could amend the NWPA to reflect standards that are similar to other environmental statutes that allow for stricter state environmental safeguards, such as the Coastal Zone Management Act. Local environmental protections, land use plans and</p>

Commented [DD4]: Should only apply to consent based consolidated interim storage construction in an affected state that is not on federal land. Would not apply on federal land, since established law grants the federal government exclusive rights to federal land use and I doubt they would cede that right to states.

	<p>successful containment of SNF radiation from people and the environment.</p> <p>The roadblock of utility players not wanting to spend money on buying quality casks needs to be mitigated through state and federal regulation. This requirement should apply to new canister applications and the canisters used to repackaging/replace existing SNF in dry storage</p>
Recommendations #24 (pg 39)	<p>24. Congress should require the DOE and nuclear power plant owners to develop a technical procedure for canister repackaging/replacement prior to further NRC canister license approval, SNF pool decommissioning and removal, and loading of canisters in an on-site ISFSI. (Finding V)</p> <p>There is no permanent repository approved. The nation must prepare for damaged SNF canisters which require mitigation. This repackaging/replacement procedure would ensure that all DOE criteria are met for eventual transportation of canisters off-site when a repository is available to accept SNF. 130</p>

Commented [DD29]: Delete, no basis in fact.

Commented [DD30]: Delete. This would delay the transfer of SNF to dry cask storage from wet storage. Dry cask storage is inherently safer than wet storage.

Rob Howard:

The Honorable Gregory Jaczko, former NRC Chairman
The Honorable Rear Admiral Leendert Hering ret.

Dear Co-Chairs, Messrs. Jaczko and Hering

First let me thank you and Congressman Levin for the opportunity to participate on the San Onofre Nuclear Generating Station Task Force. My time spent on the technical committee was enlightening.

As I have stated in the past, I believe our primary task is to come together with recommendations around how to move the spent nuclear fuel to a long term storage facility. That facility could be a permanent solution or a consolidated interim storage facility.

This memo is to share my concerns with the report and my support for including alternate views of the draft report. Generally, I oppose any actions or recommendations that do not support moving spent nuclear fuel to a passive, dry cast storage unit. Dry cast storage is clearly safer than wet storage pools.

I also oppose recommendations that allow each state entity to have a say in the movement and storage of fuel unless that entity is consenting to receive and store the spent nuclear fuel. Allowing states to weigh in on the transportation could present unnecessary delays in moving the fuel to a storage facility.

I support your efforts to come up with a solution to safely store the spent nuclear fuel in a permanent storage facility or a consolidated interim storage facility and I look forward to your efforts following this report. It is for this reason that I will sign on to the report if this memo is included and you specify that I support the annotations provided by committee member Dan Dominguez.

Sincerely,
Rob Howard

Jerry Kern:

I have strong reservations regarding recommendation number 4. There should be an overarching NEPA document for transportation. If Recommendation 4 is adopted as submitted the fuel will never be moved because each jurisdiction will have the EIR challenged and be tied up in litigation for the foreseeable future.

Larry Kramer:

Recommendation 8: "States must be given authority to conduct oversight of SNF storage."

This action would result in states identifying differing acceptance criteria. This would just add to the cost borne by taxpayers and cause further confusion.

The following is just a comment.

Finding Q and Recommendation 18. This seems like it might apply somewhere else but has no place in a report on San Onofre. As indicated building a structure over the canisters would be counterproductive;

ment in Finding Q implies there is, which if not true, is misleading at best.

Ted Quinn:

Please see attached my comments to the draft report. The comments to the First Section, Federal Legislation and Regulatory Oversight,” have been incorporated and I want to sign to endorse this Section. However, as per the attached comments which were not incorporated, I cannot include my name in endorsing or agreeing with those sections.

I am requesting that you revise the Members listing on Page 1 to list me as follows:

Ted Quinn, community member-at-large, Federal Legislation and Regulatory Oversight Only
--- see attached comments dated February 23, 2020

I support the Congressman and the First Section of this Report and hope that it can help support resolution of the disposition of Spent Nuclear Fuel (SNF) for SONGS and the U.S.

State Policy Recommendations Section

Letter/Number	Comment
Finding H	<p>Finding H. “According to a March 2019 NRC report, these canisters lack tion, monitoring, maintenance, and repair via ods²⁰.”</p> <p><i>COMMENT:</i></p> <p><i>Why wouldn't the actual NRC report from NRC's website be footnoted? Furthermore, the report referenced, Footnote 21, does not support the above statement.</i></p> <p><i>Reference 22, lacks legitimate peer-review.</i></p> <p><i>Reference 23, lacks legitimate peer-review or acceptance by staff outside of SLF.</i></p> <p><i>Reference 24—has it been accepted by peers outside of Surfrider?</i></p>
Finding H	<p>“The lack of retrievability is further complicated by the fact that SCE has in the event that a damaged storage canister must be emptied into new and more robust canister models”</p> <p><i>COMMENT: SCE has demonstrated retrievability repeatedly using the canister simulator. There is no legitimate technical reason to believe MPCs cannot be retrieved from the storage module.</i></p>

Finding I	<p>“The agencies make nuclear waste permit decisions almost entirely based on utili-</p> <p>COMMENT: <i>I don’</i></p>
Recommendation 6	<p>“Retrieval is defined here as removal from the ISFSI storage facility and opened for fuel assemblies to be removed from the canisters.”</p> <p>COMMENT:</p> <p><i>What does it mean? What system is envisioned? SCE has demonstrated capability to inspect and repair canisters stored in UMAX modules.</i></p> <p><i>This paper just r etrievability? Retrieval does not include removal of fuel from the canister at the site; no one advocates opening storage casks (canisters) simply to see what the condition is inside the container. The DOE/industry is already investigating non-invasive means</i></p> <p><i>Regardless, there is no credible degradation mechanism for container contents, provided integrity is maintained, due to the drying pr</i></p>
Recommendation 6	<p>“There is no transfer station on-site to repackage/replace a damaged canister^{34,35}. This inability to repackage/replace nuclear waste may create a host of risks to people and the environment over time.”</p> <p>COMMENT:</p> <p><i>No shutdown site in the U.S. that is proceeding into full decommissioning, has maintained or been required to maintain a spent fuel pool by the NRC. This was reviewed and accepted by the CCC at the 2019 hearing as well.</i></p>
Recommendation 7	<p>“Permits and licenses are approved by the NRC and various California agencies without the utility meeting the permit conditions on the day of approval”</p> <p>COMMENT:</p> <p><i>What conditions of the permit wer</i></p> <p><i>and unanimous appr</i></p> <p><i>e-</i></p> <p><i>quirements now and a set of controls on SCE actions as the permit holder to meet in the future.</i></p>
Recommendation 8	<p>“States much be given authority to conduct oversight of spent nuclear fuel storage.”</p> <p>COMMENT:</p> <p><i>This is counterproductive, in both that a Congressional Task Force is recommending state law changes for one state, and the fact that oversight of the safety and licensing of nuclear facilities resides with the NRC by the Federal Code of Regulations (CFR). An action like this would result in multiple states identifying differing acceptance criteria at added cost and also requiring states to retain similar experts to the capabilities of NRC employees, which again, would be double coverable and the cost born by taxpayers and ratepayers.</i></p>

Recommendation 9	<p>“The State of California should task their regulatory authority on nuclear waste oversight with identifying an consent-based interim or permanent nuclear waste storage site in California.”</p> <p><i>COMMENT: Not legal in accordance with the NWPA --- it is federal responsibility for all facilities including power plant and medical and other radioactive wastes from industrial use.</i></p>
Recommendation 10	<p>“The CPUC should prevent the utility from going back to ratepayers and increasing rates.”</p> <p><i>COMMENT: The CPUC has oversight over the decommissioning trust funds and must ensure Nuclear Decommissioning Cost Triennial Proceedings (NDCTP). The funds, which were collected during the operational time of the plant already allow for the decommissioning to proceed without additional funds from the ratepayer presented to the NRC in the decommissioning planning phase.</i></p>
Recommendation 11	<p>“The CPUC should require power plant owners to establish funding reserves from nuclear power plant owner resources to cover emergency response to radiation releases, as long as radioactive material is on-site.”</p> <p><i>COMMENT: The CPUC already does this. Emergency Planning response funds are part of the Decommissioning Cost Estimate, that is revised every 3 years.</i></p>
Conclusion	<i>Comment corrected.</i>

Best Practices Section

Letter/Number	Comment
Introduction – third paragraph	Comment corrected.
Finding K	<i>COMMENT: Not true – actual consent based siting is occurring. There is also support for the repositories and CISSs. New Mexico’s CIS may still be licensed and constructed as well as Texas.</i>
Finding M	<i>COMMENT: What age of fuel at SONGS? The canisters used at SONGS meet all applicable NRC regulations. FYI: SCE has not applied for any exemptions to Part 72 licensing requirements, and neither has Holtec.</i>
Finding N	<i>COMMENT: NRC performs a prudence review of all ownership changes on operating units as well as shutdown units – and has successfully completed these with strong controls applied over many years.</i>
Finding O	<i>COMMENT: Does not recognize the 18 month shutdown and subsequent programmatic changes and NRC elevated enforcement and inspections conducted to approve the new fuel transfer process.</i>

Finding P	<i>COMMENT: Are there examples of fuel handling procedures and protocols outside the nuclear industry that the NRC should be made aware of to ensure best practices or whether the NRC has previously considered these.</i>
Recommendation 14	<p><i>COMMENT: I do not know of any that have an advertised design life greater than 100 years. NRC Generic Environmental Impact Statement for spent fuel (NUREG -2157) addresses fuel storage beyond the 60 years allowed for decommissioned plants in safe store.</i></p> <p><i>“Because the timing of repository availability is uncertain, the GEIS analyzes potential environmental impacts over three possible timeframes: a short-term timeframe, which includes 60 years of continued storage after the end of a reactor’s licensed life for operation; an additional 100-year timeframe (60 years plus 100 years) to address the potential for delay in repository availability; and a third timeframe to address the possibility that a repository never becomes available. All potential impacts in each resource area are analyzed for each continued storage timeframe.”</i></p>
Recommendation 15	<i>COMMENT: The NRC reviews the entity to determine whether they have</i>

Storage and Aging Management Section

Letter/Number	Comment
Finding S	<p><i>COMMENT: Sea wall is not needed to protect the dry storage systems, as the systems are rated to withstand submergence well above the height of the seawall.</i></p> <p>“These partially below grade storage systems add risk factors of scratching and gouging upon downloading of canisters, questionable canister and spent fuel retrievability, and prevent American Society of Mechanical</p> <p><i>COMMENT: The report referenced, Footnote 101, does not support the above statements, other than documenting scratches found on the canister surfaces.</i></p>

Finding T	<p>COMMENT: Finding T: “The only visual assessment of storage canisters method performed by Southern California Edison included a camera and a borescope, technology which takes no direct measurement, but captures photos and makes a computer model of photos (Footnote 103). This is an inadequate method of identifying canister damage and it does not qualify as an inspection (Footnote 104)”</p> <p><i>COMMENT: Determining depth through 3D analysis is exactly what the NIST-traceable standard proper system operation. Simply stating the system is inadequate lacks technical rigor. The direct response of SCE to the CCC includes requirements for an AMP ahead of the NRC requirements, including an independent review.</i></p>
Finding U	<p><i>COMMENT: This is false. Bluff failure was evaluated as part of the ISFSI safety analysis. Tsunami impact is evaluated in the UMAX FSAR, I previously referenced in this section.</i></p>
Finding V	<p><i>COMMENT: Footnote 108. There is no peer-reviewed report that suggests a breach of a dry storage canister can result in the wide-spread contamination contemplated in the economic consequence report. Comparisons are made to Fukushima and Chernobyl, operating reactors that are not comparable to SONGS spent fuel that has been cooling for over 8 years. Representing fearmongering claims by a Congressman, with no technical basis, reduces the legitimacy of this report.</i></p>
Finding X	<p>“In the absence of accurate risk calculation SCE often misinterprets comments made in previous NRC investigations. SCE staff often make claims of “zero risk,” when the true answer is that SCE does not know the true precise risk of radiation exposure from dry cask storage, over decades^{113.}”</p> <p>COMMENT:</p> <p><i>This statement does not r eview of the dry cask storage ous times in 2018 and 2019 that there is no credible threat to the public from the SONGS dry cask storage installation due to the length of time since shut-for both AREVA and HOLTEC.</i></p>
Finding Y	<p><i>COMMENT: This is correct and demonstrates a lack of understanding of the applicable research. Hydrides are formed when zirc corrodes. Since the spent fuel is stored in an inert gas (helium) it doesn't corrode in dry storage so no new hydrides are formed in dry storage. The concern for hydrides in spent fuel is that while the fuel is in dry storage the fuel may get hot enough to allow the existing hydrides to redistribute within the clad. The hydrides are brittle and if they redistribute in an unfavorable way the clad can become weaker. Based on EPRI research and looking at an actual fuel assembly (North Anna) and also a separate paper from the NRC , data shows the mechanical properties of the cladding is not compromised during long term storage of SNF. EPRI Reports attached.</i></p>

Recommendation 21	<i>COMMENT: The regulator has stated publicly the scratches do not affect transportability of the canister, and there are no provisions in the transportation license that would prohibit shipping the canisters due to the observed wear. the canister shell beyond the nominal design, which more than compensates for the measured scratch depth.</i>
Recommendation 22	<i>COMMENT: The bottom of the canister? It is a 3 inch thick plate with no credible degradation mechanisms leading to a breach. Additionally, this is the purpose of the High Burnup Fuel demonstration cask, which will examine HBF fuel rods after typical storage conditions are durations.</i>
Recommendation 23	<i>COMMENT: Already in the existing FSAR.</i>
Recommendation 30	<i>COMMENT: SCE already committed to such a program.</i>

Dave Rice:

Regarding the issue of ‘consent’: I know this is a big deal, it came out of the Blue Ribbon Commission, and it sounds ‘politically correct’ to say it. But as I see it, as it’s currently viewed (which is ‘mandatory’), this is potentially a major roadblock to success in getting the SNF off the beach here. The only mitigating factors stated in the report for implementing ‘consent-based siting’ are words like ‘timeline requirements, incentives for sites to accept, and enforcement mechanisms’ in Recommendation #3. These aren’t adequate.

I think the language should say that, while consent is the goal, and we would look for that wherever

a state like ours needs to have an ability to enlist ‘eminent domain’ and move forward with a site even if ‘consent’ in the area cannot be completely established. End of the day, if no one consents, 8 million people are screwed, and that makes no sense (if we’re talking about compared to a site in the desert let’s say with 1000 people or less who aren’t all on board).

Dan Stetson:

Only Federal section, see disclaimer:

Daniel Stetson, community member-at-large, Federal Legislation and Regulatory Oversight Only --- see attached comments from Ted Quinn dated February 23, 2020

David Zito:

tions which creates challenges on determining urgency or prioritization and would feel more comfortable if this had been added.

APPENDICES

Both appendices are available at: <https://mikelevin.house.gov/san-onofre-task-force-report>

Appendix A – Technical Analysis

Appendix B – Documents and Errata

ENDNOTES

- 1 https://www.gao.gov/key_issues/disposal_of_highlevel_nuclear_waste/issue_summary
- 2 <https://www.scientificamerican.com/article/what-does-the-us-do-with-nuclear-waste/>
- 3 "Backgrounder on Emergency Preparedness at Nuclear Power Plants," NRC (noting ingestion pathway zone is within a circumference of 50 miles), available at <https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/emerg-plan-prep-nuc-power.html>
- 4 See e.g. Grant Ludwig, Lisa & Shearer, Peter. (2004). [Activity of the Offshore Newport-Inglewood Rose Canyon Fault Zone, Coastal Southern California, from Relocated Microseismicity. Bulletin of the Seismological Society of America. 94. 747-752. 10.1785/0120030149](#)
- 5 Compiled by Katie Day, "Task Force Technical Analysis" Day Report 1.
- 6 Compiled by Katie Day, "Task Force Technical Analysis" Day Report 2
- 7 See US NRC email to Tom Palmisano, dated May 22, 2017. Subject: SAN ONOFRE NUCLEAR GENERATING STATION – NRC INSPECTION REPORT 05000206/2016004, 05000361/2016004, 05000362/2016004, AND 07200041/2016002
- 8 See CCC. 2015. Tu14a. Application Number 9-15-0228. Adopted Findings: Regular Permit. pg. 47
- 9 See CCC. 2015. Tu14a. Application Number 9-15-0228. Adopted Findings: Regular Permit. pg. 47
- 10 See CCC. 2015. Tu14a. Application Number 9-15-0228. Adopted Findings: Regular Permit. pg. 32
- 11 Compiled by Katie Day, "Task Force Technical Analysis" Day Reports One and Four
- 12 Blue Ribbon Commission on America's Nuclear Future, "Report to the Secretary of Energy" (January 2012), available at https://www.energy.gov/sites/prod/files/2013/04/f0/brc_finalreport_jan2012.pdf
- 13 Id.
- 14 Id.
- 15 NWSA 42 USC 10101
- 16 42 U.S.C. § 10132
- 17 Ringleb, Al H., and Steven N. Wiggins. "Liability and Large-Scale, Long-Term Hazards." *Journal of Political Economy*, vol. 98, no. 3, 1990, pp. 574–595
- 18 See <https://gothamist.com/news/company-poised-dis-mantle-indian-point-radioactive>
- 19 See <https://www.lohud.com/story/news/investigations/2019/06/19/nuclear-plant-decommissioning-is-a-gold-mine-for-some-but-at-what-risk/1269407001/>
- 20 Davis, L and C. Hausman, 2019, "Nuclear Moral Hazard," UC Berkeley Energy Institute at Haas Blog. <https://energyathaas.wordpress.com/2019/06/24/nuclear-moral-hazard/>
- 21 <https://www.mass.gov/lists/pilgrim-nuclear-power-station-license-transfer-application-proceeding>
- 22 Davis, L and C. Hausman, 2019, "Nuclear Moral Hazard," UC Berkeley Energy Institute at Haas Blog. <https://energyathaas.wordpress.com/2019/06/24/nuclear-moral-hazard/>
- 23 Image credit Samuel Lawrence Foundation
- 24 NRC Visual Assessment March 21-23, 2019. <http://www.samuellawrencefoundation.org/wp-content/uploads/2019/10/NRC-Visual-Assessment-Report.pdf>
- 25 Chakraborty, S, 2020, "Task Force Technical Analysis," Chakraborty report, pages 14-15
- 26 Chakraborty, S, 2020, "Task Force Technical Analysis," Chakraborty report, pages 14-15, 19-20
- 27 Day, K, 2020, "Task Force Technical Analysis," Day report 2, page 14
- 28 StoreFuel. October 2019 Issue
- 29 See SCE presentation, CEP March 2018, hour 1:34 – 1:37 <https://www.youtube.com/watch?v=mjgna2atn7Y&feature=youtu.be>
- 30 See California Coastal Commission October 2019, Hour 3:52 – 3:58 <https://cal-span.org/unipage/?site=-cal-span&owner=CCC&date=2019-10-17&mode=large>
- 31 California Coastal Commission, October 2019, Hour 3:55 – 3:58 <https://cal-span.org/unipage/?site=-cal-span&owner=CCC&date=2019-10-17&mode=large>
- 32 Day, K, 2020, "Task Force Technical Analysis," Day report 1
- 33 NRC 10 CFR 8.4, see <https://www.nrc.gov/reading-rm/doc-collections/cfr/part008/part008-0004.html>
- 34 U.S. NRC, NRC: NMSS - State Regulations and Legislation, <https://scp.nrc.gov/rulemaking.html#CA>.
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From: Bickford, Erica
Sent: Wednesday, February 23, 2022 9:51 AM
To: Consent Based Siting
Subject: FW: Some Comments on Draft DOE's Consent-Based Siting Process
Attachments: Comments on DOE's Draft Consent-Based Siting Process pdf.pdf

Comments on the Draft Consent-based Siting Process from Rich Janati, Pennsylvania Dep. of Environmental Protection and Pennsylvania representative on the Northeast High-Level Radioactive Waste Transportation Task Force.

From: Tonkay, Douglas <[REDACTED]>
Sent: Tuesday, February 22, 2022 5:12 PM
To: Bickford, Erica <[REDACTED]>
Cc: Shenk, Julia <[REDACTED]>
Subject: Some Comments on Draft DOE's Consent-Based Siting Process

Hi Erica

Hope all is well. I believe you may be the right person to get this. I've known Rich Janati for many years via the Low Level Waste Forum, where he sits in the Appalachian LLW Compact seat. He works for Pennsylvania. He sent me this (appear to be his comments going into another document) and suggested I share it with the right program folks. If you need to talk with him, I'd be glad to set up a call. Otherwise I'm out of it. Feel free to pass along as appropriate.

Doug

From: Janati, Rich <[REDACTED]>
Sent: Tuesday, February 22, 2022 2:24 PM
To: Tonkay, Douglas <[REDACTED]>
Subject: [EXTERNAL] Comments on Draft DOE's Consent-Based Siting Process

Hello Doug,

Hope you're doing well!

Attached are my comments on the DOE's Draft Consent-Based Siting Process. My comments will be submitted officially on behalf of the Northeast High-Level Radioactive Waste Transportation Task Force.

Though it would be a good idea to share the comments with you and if you are in contact with the DOE's project staff for siting an interim storage facility, please share my comments with them. During the late 90's, I managed the PA's Low-Level Radioactive Waste Program and as such I have some experience with the development of a controversial facility. Actually, we were able to find couple of communities that expressed interest in the process (in private), but due to lack of funding and also lack of political desire to continue the process, we decided to suspend the process.

If you have any questions, please let me know.

Regards,

Rich Janati

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

Comments on DOE's Draft Consent-Based Siting Process

General Comments

1. The following information should be included in the Draft Consent-Based Siting Process:
 - a. Proposed land area and approximate size of the storage or disposal facility.
 - b. A flow chart for the license application review process and decision.
 - c. Discussion of potential risks as well as potential benefits and guarantees for the local community.
 - d. Designation of nearby communities for the purpose of sharing benefits and guarantees of the project.
 - e. Formation of a local advisory committee.
 - f. Transportation considerations.
 - g. Lessons learned from other siting decisions.
 - h. A glossary of terms
2. DOE's use of the term "community" is interpreted as the broad and inclusive participation from all groups and not limited to the local community. It is important to emphasize in the early stage of the process implementation that only tribes, states, and local governments have the legal authority to make decisions and commitments on behalf of the communities regarding benefits and guarantees.
3. The draft consent siting process should point out that there will NOT be any relaxation of the general design principles and site assessment considerations at any step of the process because a particular community has expressed interest in hosting the facility. The Department should develop a "siting plan" that includes a set of technical siting criteria that each potentially suitable site must meet for a storage or disposal facility. The siting

plan should also develop a ranking method for evaluating and prioritizing the factors that are important to consider when selecting a site within the interested community (e.g., transportation considerations, weather).

DOE’S Consent-Based Siting Process RFI

Area 1: Consent-Based Siting Process

1. **How should the Department build considerations of social equity and environmental justice into a consent-based siting process?**

No comment.

2. **What role should tribal, state, and local governments and officials play in determining for a community to host a federal interim storage facility?**

Tribal, states and local governments and officials have the legal authority to make decisions and commitments regarding benefits and guarantees. States and local governments have the authority to issues certain permits that are required during facility construction and operations. Additionally, the host state and the local government are expected to establish an independent inspection and oversight program at the facility on behalf of the host community.

3. **What benefits or opportunities could encourage local, state, and tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?**

It is expected that the host community or communities will receive significant economic benefits and guarantees that can be used to improve the well-being of the residents. Benefits should relate to “general community interests.” Some of the recommended benefits for the host community are as follows:

- i. Reimbursement of costs associated with the review and evaluation of documents that DOE submits in support of the licensing of the proposed facility and to examine the DOE's license application.
- ii. Direct payment to the host community or communities and additional payments based on the amount of waste received at the facility.
- iii. Commitment to hire residents to work at the facility.
- iv. Funding to provide radiological emergency medical response training for local hospital staff.
- v. Funding for the host community's emergency management planning and training.
- vi. Payment of school district and municipal property taxes for the residents who live in the vicinity of the facility (within one or two miles).
- vii. Funding to hire a local inspector(s) to monitor the facility and its operations.
- viii. Funding for establishment and operation of a local advisory panel.

4. What are the barriers or impediments to successful siting of federal interim storage facilities using a consent-based process, and how could they be addressed?

Virtually any development project presents potential risks and disadvantages, as well as benefits. Whether it is siting a landfill or a radioactive waste storage or disposal facility, public distrust can erupt into hostility. Siting a radioactive waste storage or disposal facility will be controversial. Even with a consent-based siting process, not everyone in an interested community will welcome the final decision. The issues that are of concern to the potential host community generally include

health and safety issues, long-term management of the facility, potential negative impacts on the community due to the controversial nature of the facility, and political controversy. In order to address these potential impediments during the siting process, the DOE should:

- i. Educate the community leaders and members by providing timely and adequate information.
- ii. Include all segments of the community in discussions.
- iii. Keep discussions and decisions open and visible.
- iv. Hold small and informal meetings or open houses for greater participation.
- v. Encourage and facilitate discussions among residents with differing viewpoints.
- vi. Develop partnership with and earn the trust of the community.
- vii. Emphasize that safety is more important than economic benefits.

Also, see response to question #5 under Area 2.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

Department should develop a set of guiding principles, called the “Consent-Based Siting Principles” that define how the Department will work with potentially interested communities. The guiding principles should focus on **safety** (DOE will build the facility only if it is safe), **choice** (the volunteer community decides whether or not to host the process), and **partnership** (DOE will work as a partner with the community). Because an interim waste storage facility will be operating

for many years, the community leaders and residents will want to know the answers to questions such as:

- i. What are the risks to the workers and public during normal operations?
- ii. What measures will be in place to prevent an accidental release and to remedy the consequences of an accident?
- iii. What is the track record of existing facilities?
- iv. What is the possibility of license extension beyond the initial period of facility operation?
- v. Who will be responsible for facility closure and decommissioning?
- vi. Would the host community be liable in case there are health and safety problems?

The Department should make a commitment to provide the host community with funds to establish an independent environmental monitoring and inspection program at the facility throughout its operations. The Department should also commit to keeping the host community fully informed about facility operations and to address community ideas and concerns on an on-going basis.

6. What organizations or communities should the Department consider partnering with to develop a consent-based siting process?

The Department should consider partnering with several local governmental and non-governmental organizations and agencies for the purpose of providing “objective and unbiased” information to help the potential host communities in discussing their issues and concerns. Some of these organizations include local colleges and universities, local chapter of the Health Physics Society, local

chapter of the American Nuclear Society, local hospital association, local league of women voters, and local state agencies (environmental protection, health, transportation and emergency management). Other than the local organizations, the Nuclear Energy Institute (NEI) could provide information on a broad range of issues to the public.

7. What other issues, including those raised in the Draft Consent-Based Siting Process, should the Department consider in implementing a consent-based siting process?

Below is the list of topics or issues that the Department should communicate with the interested community during the early phase of the process.

- i. A set of guiding principles (safety, choice, and partnership) called the consent-based siting principles, that define how DOE will work with the potential interested communities (as described in response to question #5).
- ii. Discussion of potential risks and benefits associated with hosting the storage or disposal facilities.
- iii. Designation of nearby communities for the purpose of sharing benefits and guarantees of the project.
- iv. Formation of a local advisory committee.
- v. Transportation considerations.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process, and how could those barriers be mitigated or removed?

Same as response to question 4, Area 1.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

Same as response to questions 4 and 6, Area 1.

Additionally, it is recommended that DOE create a “website” primarily for the purpose of sharing with the community the latest information regarding siting and operations of the facility. The website would also serve as an information repository library for the community members.

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

The Department and the potentially interested community must adopt the “partnering attitude” and learn the skills necessary to make partnering work during the siting process. Partnering would help the parties work as members of the same team to achieve common goals while minimizing wasted time and money. The partnering concept includes:

- i. Open communication and exchange of information.
- ii. Complete access to information.
- iii. Working level staff permitted to resolve most issues.
- iv. Decisions reached by consensus or by a process agreed upon in advance.
- v. All parties taking responsibility for cultivating the partnering relationship.

The Department should offer to provide funds for training the parties involved in skills and processes for partnering, including the use of third-party facilitators to assist with the process.

4. **How might the Department more effectively engage with local, State, and tribal governments on consent-based siting of federal interim storage facilities?**

Same response to questions 4 and 5, Area 1 and question 3, Area 2.

5. **What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?**

There are potential risks and benefits for the community associated with siting a controversial facility. The issues that would be of interest to the potential host community are as follows:

- i. **Health and Safety:** Potential impact on public health and safety, and the environment during normal operations and accident conditions.
- ii. **Long-Term Management:** Possibility of license extension beyond the original facility license period, facility closure and long-term care as needed.
- iii. **Economic Benefits:** Direct payments and other benefits such as hiring of local residents.
- iv. **Potential Risks to the Community:** Liability if there are health and safety problems, involvement of outside activists to disrupt and polarize the community.
- v. **Political Controversy:** Political risks for elected officials who express interest in the facility, possibility that controversy over the project would divide the community.

Area 3: Interim Storage as Part of a Waste Management System

- 1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?**

No comment.

- 2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technology?**

There are several possible combinations in this scenario, and each has its own advantages and disadvantages. One possibility is to co-locate the consolidated interim storage facility with the pilot interim storage facility and/or with the geological repository. Although there are several advantages of co-locating the two facilities (e.g., significant reduction in transportation cost, sharing a labor pool) however, it would be unlikely for a community to consent to hosting multiple controversial facilities and to manage all of the nation's waste. On the other hand, it is probably more likely to find a potentially interested community or municipality near a commercial nuclear power plant with excellent record of safe operation.

- 3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?**

The Department should proceed with the development of a repository in parallel with the development of an interim storage facility. However, the Department may discover that it is more challenging to find a potentially interested

community to host a permanent repository versus an interim storage facility.

Therefore, it might be unrealistic to expect that the development of an interim storage facility would correspond to the progress on establishing a permanent repository.

4. What other issues should the Department consider in developing a waste management system?

The Department should prepare two sets of documents in support of the proposed Consent-Based Siting Process: a “Siting Plan” and a “Volunteer Plan”. The purpose of the Siting Plan is to provide specific technical procedures to identify a suitable site for the storage or disposal facility through a set of disqualifying features. The Volunteer Plan (or the Community Partnering Plan) should outline a process that empowers the interested communities to evaluate the advantages and disadvantages of hosting the facility. It should serve as a guide for the community members to use in considering the facility.

From: Mayor Office
Sent: Friday, March 4, 2022 1:59 PM
To: Consent Based Siting
CC: John Heaton; Mayor Office
Subject: [EXTERNAL] Response to RFI from Carlsbad Mayor's Nuclear Task Force
Attachments: Response Letter to Kris P. Singh.pdf; Letter to Sec of Eng.pdf; Letter to Honorable Governor Michelle Lujan Grisham (002).pdf; Letter to Sec of Energy Jennifer Granholm (September 21, 2021).pdf; RFI Submission- Nuclear Task Force.docx

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Cheyenne Methola
Executive Assistant to Mayor Dale Janway



This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

January 31, 2022

Dr. Kris P. Singh
President & CEO
KPS Technology Campus
Holtec International
1 Holtec Boulevard
Camden, New Jersey 08104

Dear Dr. Singh:

Thank you for your September 21, 2021, letter to Secretary Granholm supporting forward movement on a national repository for spent nuclear fuel (SNF) and high-level radioactive waste (HLW) disposal. I'm responding on behalf of Secretary Granholm.

The Department of Energy (DOE) is committed to ensuring that SNF and HLW are disposed of safely, in accordance with all applicable legal requirements, and in a manner that protects human health and the environment. Congress provided funds to the Department in fiscal year 2021 for interim storage activities and requested that the Department move forward under existing authority to identify sites for Federal interim storage facilities using a consent-based process. Secretary Granholm has endorsed this approach and further directed that consideration of social equity and environmental justice be included in the process.

Although DOE is focusing its near-term efforts on interim storage, we recognize that gaining support for any interim storage facility is highly dependent on having a strategy in place for permanent waste disposal. Therefore, as DOE moves forward with a consent-based siting process for Federal interim storage facilities, the Department will develop an overall strategy for an integrated waste management system, including provisions for ensuring the availability of permanent disposal within a reasonable timeframe.

The Department issued a request for information (RFI) on December 1, 2021, seeking public input on issues related to siting Federal interim storage facilities for SNF using a consent-based process. DOE will use responses to this RFI to inform development of a consent-based siting process, an overall strategy for an integrated waste management system, and potential action to encourage public engagement. We welcome participation and feedback from Holtec and the Eddy-Lea Energy Alliance in this process.

I look forward to working with you to solve this complex problem. If you have any questions, please feel free to contact me or Ms. Aimee Witteman, Deputy Assistant Secretary for Intergovernmental Affairs, Office of Congressional Affairs at (202) 586-5450.

Sincerely,

A handwritten signature in black ink, appearing to read "Andrew Griffith", with a long horizontal flourish extending to the right.

Andrew Griffith
Acting Assistant Secretary
for Nuclear Energy

cc: Ms. Michelle Lujan Grisham, Governor
Mr. Ben Ray Lujan, US Senator
Ms. Yvette Herrell, Member of Congress
Mr. Martin Heinrich, US Senator
Ms. Melanie A. Stansbury, Member of Congress
Christopher Hanson, Chairman, NRC
Jeff Baran, Commissioner, NRC
David Wright, Commissioner, NRC
Margaret Doane, EDO, NRC
Senator Tom Carper, Chairman, Envir.
Congressman Frank Pallone, Chairman, Energy
Maria Korsnick, President, NEI
Doug True, CNO, NEI
Jack Edlow, President, Edlow International
Pierre Oneid, CNO, Holtec International
Ed Mayer, Director, HI-STORE LLC
Joy Russell, CCO, Holtec International
Joseph Delmar, Holtec International



State of New Mexico

Susana Martinez
Governor

April 10, 2015

Dr. Ernest Moniz, Secretary
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

Dear Secretary Moniz,

This letter is to inform you of my support of the community leaders who continue to spearhead the effort to bring a consolidated interim storage facility for spent fuel to southeastern New Mexico.

The recent decision by your administration to adopt a consent-based approach for waste management should highlight areas such as southeastern New Mexico where there is broad support in the region for such an endeavor. The Eddy-Lea Energy Alliance (ELEA) is an organization with regional participation by the City of Carlsbad, City of Hobbs, Eddy County and Lea County. As you are aware, the residents of this area have a high level of understanding of the nuclear industry and its importance to our national security. There is a strong pre-existing scientific and nuclear operations workforce in the area, and the dry, remote region is well-suited for an interim storage site. ELEA has already selected a location that has been vetted extensively.

There is a significant and growing national need for such an interim storage facility. Millions of taxpayer dollars are currently being spent on monitoring and oversight of spent fuel each year, and millions more are being spent on settlement payments related to waste disposition. In many instances, these actions are taking place where such activity and the presence of such waste is disagreeable to local communities.

These communities in New Mexico support safely moving spent fuel to a consolidated interim storage site using proven technology which is the most sensible approach to this problem until a permanent and long-term solution is available. Dry cask storage is a proven, passive, and safe system that has been used since 1984 with no adverse incidents.

Dr. Ernest Moniz
ELEA Interim Storage

Time and time again, the citizens of southeastern New Mexico have impressed me with their hard work ethic and willingness to tackle national problems that many others consider to be unsolvable. In one of the most remote areas of state, they have had the ingenuity and fortitude to carve out a niche in the nuclear industry to broaden their economic base. They understand the benefits not only to their local economy, but also to our country.

Therefore, I support the ELEA and its member cities and counties in their effort to establish a consolidated interim storage facility in southeastern New Mexico that will be regulated by the high safety and technical standards of the Nuclear Regulatory Commission.

Sincerely,

A handwritten signature in black ink, appearing to read "Susana Martinez". The signature is stylized with a large, looped initial "S" and a cursive "Martinez".

Susana Martinez
Governor

The Office of Governor Michelle Lujan Grisham
490 Old Santa Fe Trail Room 400
Santa Fe, NM 87501

Honorable Governor Lujan Grisham:

We, the undersigned, are writing you to urge you to NOT put the Steinborn Bill on your call for the upcoming session of the legislature. Carlsbad and Hobbs as well as Lea and Eddy Counties remain resolute in their support for the Holtec interim storage facility because of the safety and security of the project. There are some 75 of these smaller facilities at carbon free power plants across the country that have been in place for more than 30 years providing safe and secure storage without a single incident. In the absence of a disposal repository at this time, temporary, safe, secure Consolidated Interim Storage is required as a critical step in the final disposal process as recommended by President Obama's Blue-Ribbon Commission. Governor, nuclear power is carbon free base-load energy and a clear requirement in any strategy to meet a 100% clean energy goal. This bill, if passed, may very well have serious negative unintended consequences for our national labs as well as your clean energy goal for the state.

Furthermore, as you well know, we in southeastern New Mexico, suffer with the ups and downs of the oil industry, and this safe, secure storage facility will provide some 350 jobs as well as a \$3 billion capital investment in our area. While the Oil & Gas industry is very robust now, it is inevitable that with the number of electric vehicles on the road becoming larger and larger, the O&G industry will become smaller and smaller.

We have been trying to meet with you to discuss a number of state oversight and transparency provisions as well as financial assurance standards for clean-up. We would like to meet with you after the session to solidify these as well as other state requirements for oversight. Again, Governor, we ask you to NOT place Steinborn's bill on your call.


Best regards,



City of Carlsbad Mayor Dale Janway



Eddy County Chairman Steven McCutcheon



City of Hobbs Mayor Sam Cobb



Lea County Commissioner Jonathan Sena



KPS Technology Campus
1 Holtec Blvd., Camden, NJ 08104
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Eddy Lea Energy Alliance
101 N. Halagueno., Carlsbad, NM 88221
(575) 302-6358
www.eddyleaenergyalliance.com

September 21, 2021

Ms. Jennifer Granholm, Secretary of Energy
US Department of Energy
1000 Independence Avenue SW
Washington, DC 20585

Re: Development of a Deep Geologic Repository for High Level Waste and Spent Nuclear Fuel

Honorable Secretary Granholm:

We commend the spirit behind the joint letter from Governor Grisham, Senator Heinrich, Senator Lujan, and Representative Stansbury to you for calling attention to the topic of a national repository for High Level Waste (HLW) and Spent Nuclear Fuel (SNF). We hope their letter prompts a national conversation on a matter of national security, to which please accept this letter as our humble contribution.

The parties to this letter are the Eddy-Lea Energy Alliance (ELEA) and Holtec International. ELEA is made up of the southeastern New Mexico cities of Carlsbad and Hobbs and the counties of Eddy and Lea who have a joint powers agreement between themselves and own some 1,000 acres between Carlsbad and Hobbs. Holtec International, a major leader in HLW/SNF storage in the world, is seeking a Consolidated Interim Storage Facility (CISF) license to store SNF at the ELEA site (at which time Holtec may exercise an option agreement with ELEA to purchase the land, build and operate the facility).

In 2012, the Obama/Biden administration convened the Blue-Ribbon Commission (BRC) on America's Nuclear Future. After almost two years of hearings throughout the United States, (including one meeting in Carlsbad to visit the DOE WIPP facility, the only licensed deep repository in the U.S. for defense transuranic waste disposal) the Obama administration came to a number of conclusions related to solving the problems of the "back-end" of the fuel cycle. Recognizing that a deep geological repository for HLW and SNF was already mandated in law, and the BRC concluded that one or more repositories would be needed. In addition, the BRC concluded that an integrated waste management system would benefit greatly from the construction of one or more "Consolidated Interim Storage Facilities" in the country. The BRC's rationale was that "developing consolidated storage capacity would allow the federal government to begin the orderly transfer of spent fuel from reactor sites to safe and secure centralized facilities independent of the schedule for operating a permanent repository.

The arguments in favor of consolidated storage are strongest for "stranded" spent fuel from shutdown plant sites. Looking beyond the issue of today's stranded fuel, the availability of consolidated storage will provide valuable flexibility in the nuclear waste management system that could achieve meaningful cost savings for both ratepayers and taxpayers when a significant number of plants are shut down in the future, can provide back-up storage in the event that spent fuel needs to be moved quickly from a reactor site, and would provide an excellent platform for ongoing R&D to better understand how the storage systems currently in use at both commercial and DOE sites

1 | Page



perform over time.” Obviously, the challenge for a CISF politically, in the absence of a repository, is the pushback by those opposing anything nuclear for fear a CISF will become a de facto permanent storage facility since there is no effort to site and build a deep geologic repository at this time by DOE.

There are 75 SNF storage sites at various utility sites in 35 states. The utilities and communities associated with the carbon free energy generation facilities had never expected to be long term storage facilities. The 1982 NWPA created “standard contracts” with the utilities for DOE to take title to the utility’s SNF and move it to a deep geologic repository by 1998. It is now more than two decades past the deadline for DOE to have a repository for disposal of the SNF. Every utility that has sued for breach of contract and compensation has won their suit. Every taxpayer is presently paying into the government settlement fund to pay the utilities for their storage costs of some \$800 million annually. And, that liability is growing as more plants are decommissioned. A CISF is a much more economically efficient way to store and manage the fuel as it cools in preparation for the repository.

We strongly believe with your sophisticated political acumen and leadership you can bring the affected state governors and Congressional delegations together to create a strong movement in Congress and your department to solve the repository problem. Both Holtec and ELEA implore you to begin the search for a repository location. This is a critical infrastructure project if we are to get to 100% carbon free electricity generation in our country, which as we all know, will take base load, carbon free nuclear power to achieve the goal.

We hope you will agree to meet with us to further discuss solving the back-end of the nuclear fuel cycle issues, which are critical to the development of more carbon free nuclear power.

Sincerely,

Dr. Kris Singh, President & CEO
HOLTEC INTERNATIONAL

Mr. John Heaton, Chairman
ELEA Alliance

cc: Ms. Michelle Lujan Grisham, Governor
Mr. Ben Ray Lujan, US Senator
Ms. Yvette Herrell, Member of Congress

Mr. Martin Heinrich, US Senator
Ms. Melanie A. Stansbury, Member of Congress

cc

Christopher Hanson, Chairman, NRC
Jeff Baran, Commissioner, NRC
David Wright, Commissioner, NRC
Margaret Doane, EDO, NRC
Senator Tom Carper, Chairman, Envir.

Congressman Frank Pallone, Chairman, Energy
Dr. Kathryn Huff, Asst. Sec., DOE
Maria Korsnick, President, NEI
Doug True, CNO, NEI
Jack Edlow, President, Edlow International

Pierre Oneid, CNO, Holtec International
Ed Mayer, Director, HI-STORE LLC
Joy Russell, CCO, Holtec International
Joseph Delmar, Holtec International

Attachments: Biography of Dr. Krishna P. Singh
Biography of Mr. John Heaton

BIOGRAPHICAL PROFILE

Dr. Krishna P. Singh
k.singh@holtec.com

Dr. Kris Singh is the Founder, President and CEO of Holtec International, headquartered in Jupiter, Florida which he established in 1986 and nurtured its steady rise into a multi-national company with its business footprint in 18 countries on five continents. He is also a Professor at the University of South Florida's Institute for Advanced Discovery and Innovation where he collaborates with the USF faculty in applied energy technology research.



Dr. Singh received his Ph.D. in Mechanical Engineering from the University of Pennsylvania, Philadelphia (1972), a Master of Science in Engineering Mechanics also from Penn (1969), and a Bachelor of Science in Mechanical Engineering from BIT Sindri (Ranchi University), India (1967). Dr. Singh was elected to the National Academy of Engineering in 2013 for his seminal impact in the energy sector of mechanical engineering. He received Edison Foundation's "Thomas Alva Edison Award" in 2015 for his ecologically and environmentally impactful inventions. Rutgers University named him "South Jersey an of the year – 2016" for his significant beneficial impact on the South Jersey region. In 2015, he received the George Washington medal from the Engineer's Club of Philadelphia. In 2017, the National Academy of Inventors elected him a Fellow and the University City Science Center (Philadelphia) inducted him into its "Walk of Fame." The *Pan American Academy of Engineering*, the Americas' institution of leading engineering thought leaders, elected Dr. Singh to its Academy in 2020. In 2019, he was elected to the Academy of Science, Engineering and Medicine of Florida. He was named a Fellow of the American Society of Mechanical Engineers in 1987 for his numerous contributions to heat exchange technologies. He is an overseer at the University of California, Berkeley, and a senior fellow in Mechanical Engineering at the University of Pennsylvania. He is a registered Professional Engineer in Pennsylvania and Michigan and a member of the American Nuclear Society.

A widely published author in scientific journals (74 technical papers, one textbook and numerous symposia volumes) and a prolific inventor (135 patents granted, many pending), Dr. Singh has led Holtec International since the company's inception, building it into a technological powerhouse globally respected for its engineered goods and services with nine major operations centers on five continents. Over 140 nuclear plants around the world employ Holtec's systems and equipment, many based on Dr. Singh's patents. Thanks to the steady stream of design innovations, Holtec is widely held to be globally pre-eminent in the management of used nuclear fuel.

Several national and international codes and standards on pressure vessels and heat exchangers bear the imprint of his applied research. In recent years, Dr. Singh has been leading Holtec in the global race to develop a "walk away safe" small modular reactor to make nuclear energy a cost-competitive clean energy solution for a world struggling with rising carbon emissions. Under Dr. Singh's leadership, Holtec is in the vanguard of emerging field and challenges such as cloud-based information management of all Company operations, development of cutting-edge manufacturing processes & machines, devising innovative technologies to decarbonize global economies, and applying Holtec's patented below-ground interim storage technology to solve America's used nuclear fuel conundrum.

He is also a passionate sponsor of expedited regulatory acceptance, construction, and commissioning of the Company's transformative, "walk away safe" small modular reactor, SMR-160 which has been in development for over a decade and has been substantially self-funded by the Company.

Ensuring an environmentally safe decommissioning of nuclear units after their shutdown using the Holtec's Decommissioning Management Model which has been instrumental in enhancing the safety of the Company's fleet of shuttered plants is of a piece with Dr. Singh's *modus operandi* to push the technology envelope in every industrial sector where Holtec operates. His latest bold move is to save the retiring coal fired plants from demolition by converting them into energy storage and clean power delivery plants using Holtec's patented "green boiler technology."

An intrepid entrepreneur and a socially conscious industrialist, Dr. Singh built a \$310 million Technology Campus on the Delaware River in Camden, NJ in 2017 to create much needed employment in one of America's poorest cities.

BIOGRAPHICAL PROFILE

Dr. Krishna P. Singh
k.singh@holtec.com

Dr. Singh is currently an Emeritus member of the University of Pennsylvania's Board of Trustees, where he served from 2009-2017, and an active member of the Penn's Board of Overseers for the School of Engineering and Applied Science. In addition, he serves on the Board of the Nuclear Energy Institute (1998-present), the *Atlantic Council*, a Washington, DC-based think tank, the "National Investment Council" of Ukraine and the Cooper Health System, Camden, NJ. He chairs the KPS Foundation, a charitable Singh family foundation whose signature contribution to the advancement of science is the completion of the "Krishna P. Singh Center for Nanotechnology" at the University of Pennsylvania in Philadelphia in 2013. The KPS Foundation is also active in improving child literacy and public health in developing countries.



John A. Heaton

John Heaton is the volunteer energy coordinator for the City of Carlsbad where he serves as the Chair of the Mayor's Nuclear Task Force. He is also an appointed member of the board of the Eddy-Lea Energy Alliance and Chairs the Board of CEHMM and the NM Mining Commission. Prior to these appointments, he was elected to the New Mexico House of Representatives where he served on the interim Radioactive and Hazardous Waste and Pension & Investment Oversight Committees. At the national level, he was chairman of the NCSL Energy committee, where he chaired the Environmental Management oversight sub-committee and the High-Level Waste Working Group. He is married to Julia and has two adult children.

March 4, 2022

Office of Spent Fuel and Waste Disposition
Office of Nuclear Energy, Department of Energy
1000 Independence Avenue SW
Washington, DC 20585
consentbasedsiting@hq.doe.gov

Attention: Dr. Kim Petry
Acting Deputy Assistant Secretary for Spent Fuel and Waste Disposition

Reference: Department of Energy, Notice of Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities [FR Doc. 2021-25724 Filed: 11/30/2021 8:45 am; Publication Date: 12/1/2021]

Subject: **Letter by Mayor's Nuclear Task Force endorsing the joint Response by Holtec International and Eddy Lea Energy Alliance to DOE's RFI: Consent-Based Siting and Federal Interim Storage**

Dear Acting Deputy Assistant Secretary Petry:

The **Carlsbad Mayor's Nuclear Task Force is pleased to submit a response to the Department's Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities.** The Nuclear Task Force is an ad hoc advisory committee to the mayor of Carlsbad, N.M. We endorse and support the joint letter submitted by Holtec International and the Eddy Lea Energy Alliance as a part of this RFI process. For reference, the content of the Holtec/ELEA letter is included after this cover letter.

ELEA is a public body created through a joint powers agreement of the New Mexico cities of Carlsbad and Hobbs and the counties of Eddy and Lea and own some 1,000 acres of land between Carlsbad and Hobbs optioned for the proposed HI-STORE Consolidated Interim Storage Facility (CISF). Holtec is a world-wide leader in HLW/SNF storage and transportation technologies and is seeking a license for the HI-STORE CISF to store spent nuclear fuel (SNF) on the ELEA site.

We believe that by adopting the type of consent-based system described in the Holtec/ELEA submission, and with appropriate legislative authorizations, the Department of Energy (DOE) can – and should – determine that HI-STORE would a suitable federal interim storage facility while, pending such designation HI-STORE will continue on its

current path as a wholly private facility. The Holtec/ELEA submission addresses many of the political pitfalls associated with the situation as well, and offers potential solutions.

We appreciate the Department's thoughtful consideration and review of the Holtec International and ELEA response to this RFI. We hope you will agree to meet with HOLTEC and ELEA to discuss using the HI-STORE CISF to assist the Department realize its vision for an integrated waste management system.

Sincerely,



Carlsbad Mayor Dale Janway



John Heaton

Co- Chair, Carlsbad Mayor's Nuclear Task Force

Response to RFI: Consent-Based Siting and Federal Interim Storage

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Appendices

Appendix A:	Letter from DOE’s Acting Assistant Secretary for Nuclear Energy Andrew Griffith to Dr. Kris Singh of Holtec, dated January 31, 2022
Appendix B:	Letter from New Mexico Governor Susana Martinez to Secretary of Energy Moniz, dated April 10, 2015
Appendix C:	Letter to New Mexico Governor Lujan Grisham submitted by the City of Carlsbad Mayor Janway, City of Hobbs Mayor Sam Cobb, Eddy County Chairman Steven McCutcheon, and Lea County Commissioner Jonathan Sena
Appendix D:	Letter to Secretary of Energy Granholm from Dr. Kris Singh, President & CEO, Holtec International and Mr. John Heaton, Chairman, Eddy Lea Energy Alliance, RE: Development of a Deep Geologic Repository for High Level Waste and Spent Nuclear Fuel, dated September 21, 2021

1.0 Introduction

Holtec and ELEA are pleased to present the following responses to the Department of Energy's Request for Information (RFI) related to the consent-based siting and federal interim storage of spent nuclear fuel. These responses highlight impediments to the consent-based siting process, strategies to mitigate them, as well as outline the essentials of an opportunity for a relationship between the Host communities and Holtec that we believe holds the greatest promise for success.

2.0 Consent-Based Siting Process

Question 1

How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

Answer to Question 1: The Department should, as envisaged in Federal law, tailor its environmental justice considerations to the specific nature of a consolidated interim storage (CIS) installation (hereafter called "facility" or "CIS") guided by the determination of other governmental agencies such as the Office of Nuclear Material Safety and Safeguards (NMSS) within the Nuclear Regulatory Commission (NRC). For example, under current NMSS procedures, the potentially affected area is normally determined to be a radius of 0.6 mile from the center of the proposed site in urban areas, and four miles if the facility is located in a rural area. Under this guidance, the affected region will extend to 4 miles in all directions from the center of the project site for Holtec's HI-STORE CIS project in the rural southeast New Mexico. This delineation of the affected area should not be compromised by outlying unaffected areas whose financial interests may not be aligned with those of the affected inhabitants. It is also necessary that the Department develop a set of criteria that give the affected community an informed voice in making the determination. It is unfortunately true that well-funded activist groups often succeed in spreading mistruths and canards to scare off the unwary citizens. To combat such malicious machinations, the governmental agencies should actively sponsor educational seminars in the affected communities by qualified subject matter experts to disseminate truthful information. The objective of environmental justice could be blocked if those unaffected by the facility have a direct or indirect voice in the site selection process.

The governmental bodies should craft its criteria for environmental justice compliance that stress quantitative fulfillment of the needs and aspirations of the affected community. Holtec International recommends the use of an environmental justice questionnaire to self-determine whether locating the CIS would comply with environmental justice in spirit and law. The Company would be pleased to share its questionnaire with the DOE on a confidential basis. The questionnaire should seek to ensure that:

- a. There will be no adverse impact on the health and well-being of the residents who live within the affected area around the *facility*.
- b. The local environment will not suffer any degradation whatsoever.
- c. The income generated by the facility will be shared with the local community to help improve their infrastructure, and tax burden.
- d. The facility will offer employment opportunities to the local residents to the extent possible.
- e. The facility will contribute towards helping improve the quality of life of local residents.
- f. The facility will not create a new type of accident that would endanger the lives or property of the people who live in the local communities.
- g. The facility installed at the site shall be of the safest type available in the industry.
- h. The facility shall be capable of being decommissioned and repurposed for other industrial uses after its useful service life.

We should observe that Holtec employed the above criteria to establish the suitability of the ELEA property and then ran, along with ELEA's leadership, a technology awareness campaign for the past 4 years. The

success of our environmental justice process has become evident as the local communities are expressing unqualified support for our HI-STORM CIS project.

Question 2

What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Answer to Question 2

The agreement of consent should be limited to the host community which should be encouraged to consult with the Tribal leaders, State, and local governments and officials and other the communities in the vicinity of the proposed facility.

It is not possible to garner unilateral agreement to any action, especially to agree on a facility that is as emotionally charged as storage of spent nuclear fuel. The role of Tribal, State, and local governments and officials outside of the host community should be that of regulators within the purview of their department, such as the EPA and the State Environment Department.

Question 3

What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

Answer to Question 3

The Department can cite the following framework of benefits that can be offered to accrue local, State, and Tribal governments by building a CIS on the land owned by a willing local group of communities:

- A revenue sharing program evolving from the use of public lands, transportation and access routes, and other community initiatives are among the most optimal and extensive methods of engaging the local communities in a beneficial manner. The Department should clearly identify the financial benefits that will accrue to the host communities. Understanding that the host **communities will ultimately negotiate with the Department, establishing a “floor” would be** beneficial to permit potential communities to include the financial data in their evaluation process.
- New positions needed to design, build, manage and operate the CIS will be filled primarily by local residents.
- The need for local and regional goods and services in support of the project, which is intended to be a long-lasting endeavor, will incubate business growth for many years.
 - Through large engineer, procure and construct (EPC) capital expenditures requiring significant employment and engagement of the local labor pool and businesses;
 - Research and maintenance jobs resulting from spent nuclear fuel and canister aging considerations;
 - Rail car and transport cask maintenance activity; and
 - If necessary, sizing, and repackaging location for fuel going to a repository with the federal **interim storage facility as the “front end” for a repository feed stream.**
- Provide assurance that the CIS will become the nucleus for spawning new business and industries in the host territory over the near- and long-term.

An excellent case study of a successful campaign executed by the Department is its own Waste Isolation Pilot Plant (WIPP). WIPP is the nation's only deep geologic long-lived radioactive waste repository. Located 26 miles southeast of Carlsbad, New Mexico, WIPP permanently isolates defense-generated transuranic (TRU) waste 2,150 feet underground in an ancient salt formation. The economic benefits of WIPP to the communities are well known and enjoyed by the communities and the State. Additionally, the safety record

of WIPP operations and the transportation of radioactive material to the site provides solid evidence that a federal facility for storage of radioactive material is achievable.

Question 4

What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

Answer to Question 4

There are several impediments that stand in the way for establishing a CIS; we focus on two most formidable challenges:

1. Absence of an active government program to establish a repository; and
2. The definition of the term "consent."

The Department faces public opposition to an interim site because opponents believe that an interim site will become an indefinite site. The Department is faced with opposition that without the Department identifying a true disposal site, the host communities will become the site for the nations spent nuclear fuel and high-level waste *forever*. Opponents and even supporters of interim storage in the host community and the State must be persuaded to understand that the Federal Government will fulfil its obligation for a **repository**. In a hopeful development, DOE's Acting Assistant Secretary for Nuclear Energy Andrew Griffith has recently written to Dr. Kris Singh of Holtec that **"the Department will develop an overall strategy for an integrated waste management system, including provisions for ensuring the availability of permanent disposal within a reasonable timeframe"**. (A copy of the letter is included as Appendix A). We believe follow up action on the repository by the USG will help overcome the public's concern.

Lacking a clear definition by the Department of the community, group, or population that the Department looks to for "consent", the Department of Energy faces a monumental task in its endeavor to site a federal interim storage facility. "Casting the net too wide" in the definition of the population that constitutes "consent" will result in the inevitable failure of the siting process. ***Consent should come from the communities that is willing to host the federal site.*** It is the Department's responsibility to identify and address, as appropriate, adverse human health or environmental effects of a Federal interim storage facility and associated activities on minority populations and low-income populations in the vicinity of the proposed facility offered by the willing host communities.

Holtec, through its HI-STORE facility in New Mexico, has already made significant progress on this matter. An overwhelming majority in the affected area, as defined by NMSS, supports the HI-STORE CIS program developed by Holtec and its host communities, the Eddy Lea Energy Alliance. The Holtec /ELEA relationship has succeeded in forging the support by focusing on the following key points:

- The HI-STORE CIS will store the fuel below-the-ground in secure concrete silos designed to be invulnerable to terror or extreme environmental phenomena.
- The fuel will be stored in readily transportable canisters that are recognized by regulatory authorities around the world, including the NRC, to be leak-tight under all conceivable accidents. Thus, the fuel can be removed from the site without any difficulty.
- It is impossible to have a radiological accident at the HI-STORE CIS or any discernible release of radioactivity to the surrounding community.
- The local communities will benefit from the HI-STORE CIS through , new job opportunities, and improved infrastructure and education of the young.

Our message delivered through credible spokespersons, has resonated in the proposed host communities that has spawned substantial support. We invite the federal government to take advantage of the progress

already established over the course of the last decade in the development of a HI-STORE CISF and provide a robust pathway to successfully initiate and execute the federal interim storage program.

Question 5

How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

Answer to Question 5

The duration of storage of spent fuel at federal interim storage facilities will be driven by the availability of a federal repository or another federal program for final disposition of spent fuel.

There is no question that the USG has diminished credibility with the public, having failed to honor the law to begin removing fuel in 1998 and then failing to continue the Yucca Repository program. To overcome the trust deficit, the DOE should take the following bold steps:

- Make an irrevocable commitment to the nation that a repository will be operational by a reasonable feasible date, say 2060, and agree to give the host communities , in the case of non-performance, the right to seek reparations for failing to remove the used fuel from their land by the promised date violating public law.
- Secure an Executive Order from the President making the above commitment as evidence of national resolve to provide a permanent solution.

Dry cask storage systems have been used at U.S. nuclear power plants for four decades with an excellent safety record: the industry can rightfully claim an impeccable record of safety. Part of the reason for that success is the robust design of the dry storage systems. Another reason is proper care and maintenance, including implementation of aging management programs (AMPs) required by the NRC.

The NRC's Continued Storage Rule (formerly Waste Confidence Rule) expresses the Commission's confidence that the fuel can be stored safely in dry storage systems for at least 120 years. The Department will need to educate the local communities on the safety record of the dry storage industry, the robustness of the system designs, the security offered by the robust systems and the overall ability of the dry storage systems to perform their intended functions until such time as the Department fulfills its obligation under the NWPA for final disposition of the spent fuel.

Question 6

What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

Answer to Question 6

DOE should consider partnering with organizations that have evinced a strong commitment to the CIS program. ELEA, the consortium of four local governments in Southeast New Mexico invited Holtec, the **nation's** most prominent designer and provider of state-of-art storage systems, to provide a compelling CIS solution. From the very beginning, the HI-STORE CISF has enjoyed overwhelming local community support and a majority support throughout the State. The then-governor of New Mexico, Susana Martinez, wrote a strong letter of support of HI-STORE CISF to the then DOE-Secretary Moniz (a copy of the letter is included as Appendix B). A recent letter to the now-governor of New Mexico Lujan Grisham submitted by the City of Carlsbad Mayor Janway, City of Hobbs Mayor Sam Cobb, Eddy County Chairman Steven McCutcheon, and **Lea County Commissioner Jonathan Sena demonstrates that the local communities "remain resolute in their support for the Holtec interim storage facility"** (a copy of the letter is included as Appendix C). **Inspired by DOE's sincerity of purpose, Holtec has spent over \$80 million dollars of its own money** on the HI-STORE CISF program. The program is now close to securing the license from the NRC.

In light of the above, the Holtec / ELEA relationship is an eminently suitable structure for the Department to establish a consent-based site in southeast New Mexico where our relationship has worked since 2016 to win public acceptance. We urge the DOE to recognize that a one-size-fits-all consent-based process is both unnecessary and inappropriate. HI-STORE has the consent – through ELEA and its members – of the people who will be most directly affected. With a site that has been through safety and environmental review, the HI-STORE CISF provides an unprecedented opportunity to the Department to make good on **the government's long-standing promise to defuel nuclear plant sites.**

The HI-STORE Consolidated Interim Storage Facility uses the latest dry storage technology, embodied in **Holtec's HI-STORM UMAX** system, and holds the fuel in subterranean impregnable silos which emit virtually zero radiation dose and essentially preclude the risk of harm from the modern-day scourge of terrorism.

A close relationship with the Holtec / ELEA organization will help the Department fulfill its obligation to the industry and the Nation. **Nuclear power's Achilles' heel, used fuel and high-level waste** stranded at the existing nuclear plants, will vanish as a millstone around the neck of the nuclear industry if the Department, working with Holtec / ELEA relationship begins to fulfil its obligation under the NWPAA for final disposition of the spent fuel.

Question 7

What other issues, including those raised in the Draft Consent-Based Siting Process, should the Department consider in implementing a consent-based siting process?

Answer to Question 7

We consider the following factors to be essential parameters that will help structure a successful consolidated interim storage program:

- Engagement with a qualified entity, henceforth referred to as Private Initiative (PI), that has consistently demonstrated success in the engineer, procurement, and design (EPC) and the operations and maintenance (O&M) of used fuel storage facilities.
- Engagement with a PI having sufficient resources and financial investment in and commitment to the project to embody the principles of consent-based siting and obviate the challenges of local opposition.
- Engagement with a PI that fulfills the following criteria:
 - Supports policies and regulatory actions that advance the use of clean, reliable, and affordable carbon-free nuclear energy to protect the health, environment, and economic well-being of disadvantaged communities.
 - Integrates environmental justice considerations in the Company Project Plans so as to meet the laws, regulations, and policies that protect public health, safety, and the environment.
 - Integrate environmental justice considerations into company business practices, including those related to selection of contractors and suppliers.
 - Maintains a solid governance program that prevents discrimination of minorities in their hiring and promotion practices.
 - Maintains a Learning Management System to inculcate a deep understanding of Environmental Justice considerations in their workforce.
 - Secures input from disadvantaged communities in the affected areas around a project facility to identify and address environmental justice issues.

- Maintains an effective outreach to disadvantaged communities to enable meaningful participation by the affected citizens.
- Implementation of a Department-PI business model (such as a PPP) that incentivizes and provides accountability for performance while providing sufficient capitalization and operational resources, and support.
- Selection of a site that does not have a disqualifying or otherwise contentious safety or licensing flaw (seismic, tornado, flooding, soil stability, emergency planning, etc.) to preclude impacts and complications in EPC, licensing, and stakeholder relations (e.g., seismic issues at the PFS AFR, the Yucca Mountain Repository, the 2011 North Anna ISFSI seismic event).
- Ensure that the CISF is robust and capable of unquestionably protecting public health and safety for severe design basis external man-induced events (10 CFR 72.94) such as an airliner crash into the storage systems (e.g., late imposition of an issue by the Atomic Safety and Licensing Board for the PFS AFR and an accident consideration at reactor site ISFSIs) or radiological sabotage and terrorism.
- Ensure that the necessary rail access to the site can be built without significant physical or legal impediments, (e.g., the denial of the 12-mile rail extension thru the tribal lands controlled by U.S. Bureau of Land Management ultimately ended **the prospects of PFS' AFR in Skull Valley, Utah**).
- Make sure that the population density near and around site is very, very low.
- Beyond the CIS siting process, Holtec encourages the Department to consider engaging a private entity as an agent to prepare for and to conduct the transportation campaigns to move the spent fuel to the CIS. The use of an experienced private entity will accelerate the shipping process by capitalizing on the experienced shipper rather than the Department developing this program. A company such as Edlow International has decades of experience determining transportation routes, engaging with the Federal, state, and local agencies, coordination with other partners, stakeholders, and the public, etc.

3.0 Removing Barriers to Meaningful Participation

Question 1

What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

Answer to Question 1

It is clear from past public engagement meetings that one of the greatest impediments to meaningful participation by the citizenry is the prevalence of a highly polarized discussion between pro- and anti-nuclear advocacy groups, both of whom will commandeer the conversation to address their individual concerns that are only sometimes related to the matter at hand, as well as to respond to previous dissenting commenters in their own defense. These discussions are not meaningful and provide no recourse for resolution for either side. For the most part, they only serve to cause further division and serve as a public platform to spread misinformation.

While it is important for inclusivity's sake that all voices be heard, effective measures can be taken to avoid this continuous conversational stalemate. The best way to accomplish this is to include a moderator for these discussions so that the speech remains relevant to the topic and to quell the frequent whataboutism that bogs down the dialogue. The moderator should also be responsible to keep each speaker to their allotted time and to only speak one time. This moderator should not simply be a designated DOE employee but an individual specifically hired for this task with experience moderating discussions among emotionally

charged speakers. This will allow the Department to focus their narrative in attempting to build a safe and ethical nuclear future in the United States.

Question 2

What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

Answer to Question 2

The Government should educate elected officials from each state on the federal facility development plan and ensure that each state has a vested interest to ensure that communities, including underserved communities, have the information needed so that they can evaluate the pros, cons, risks, and rewards of becoming a host community.

The Government should lay out its federal facility development plan through blogs and public meetings. All steps in the engagement process must be transparent and devoid of political influence to the extent possible.

The Government must consider that underserved communities may not have access to electronic media and thus must provide information to these communities in a manner that is commensurate with the technology (or lack thereof) in the community. Reiterating that elected officials must have a vested interest **in ensuring that their respective constituency has been afforded the opportunity to receive the Department's** information.

Holtec provides additional methods for community outreach in its response to Questions 1, 2,3, & 5 in this Section and in Question 1 of Section 4.0 Interim Storage as Part of a Waste Management System

Question 3

How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

Answer to Question 3

Following self-identification as a willing host community, the Department should establish an engagement panel with the potentially interested communities. An objective of the engagement panel(s) is to provide an open and transparent dialogue with the potential host community with respect to scientific facts on spent fuel storage and transportation.

Another objective of the panel is to enhance and foster open communication, public involvement, and education on spent fuel storage and transportation. To foster an open discussion based on facts and science, the Department should invite nuclear industry experts to present on pertinent topics at each meeting. Please see the response to Question 1 in this Section for recommendations on how to facilitate a public meeting where participants are encouraged to speak.

Holtec further recommends benchmarking the programs for spent fuel storage in other countries such as Canada, Finland, France, Sweden, Switzerland, and the United Kingdom to identify best practices adopted by other countries that would benefit the Department and the U.S.

Question 4

How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

Answer to Questions 4

Please see responses to Questions 1, 2, 3, and 5 in this Section.

Question 5

What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Answer to Questions 5

Access to scientifically reliable and readily interpretable information is paramount in achieving the consent of a community. Information that the public can understand on the effects a CISF will have on their community, the technology used to safely store spent nuclear fuel, as well as the dose information to address any health concerns the public might have. This information must be readily available to the public.

The correct information alone on the government's website may not be fully effective because of a distinct lack of trust on the public's part. Many communities feel wronged by the nuclear mistakes of the past and the federal government's response to them. Until the federal government makes a show of good faith that addresses verified mistakes such as by committing to pay reparations, it will never be able to repair the trust of its under-represented citizens, a requirement necessary to truly fulfill the intention of a consent-based site.

We suggest that the Department contract with a respected Think Tank such as the Atlantic Council, to serve as the disseminator of information in a form and format that resonates with the local communities.

4.0 Interim Storage as Part of a Waste Management System

Question 1

How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

Answer to Question 1

As discussed in Question 1 in Section 1, Environmental Justice is a tool, within the normal NEPA context, to identify communities that might otherwise be overlooked and identify impacts due to their uniqueness. As with all Federal actions, **NEPA requires Federal agencies to take a "hard look" at the environmental impacts of major Federal actions significantly affecting the quality of the human environment.** Therefore, part of **the Department's** mission should be to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of a Federal interim storage facility and associated activities on minority populations and low-income populations in the vicinity of the proposed facility.

It is Holtec's belief that the environmental consequences from the development of the nation's waste management system should not disproportionately affect a single group of people. To balance the inevitable effects—both negative and positive—of the project's development, the Department specifically needs to target the voices of historically under-represented communities in a provocative manner. While hosting public meetings in town halls will be necessary to promote open communication with communities, it is unlikely that such events will be extremely successful at the goal of inclusion. Environmental justice is not a concept that can trickle down from the top in the form of an executive order and achieve progress. The divining entity must strive to make the effort pervasively ubiquitous on the community level not only through conversations in the government-owned halls of cities but in both public and private schools, churches, and tailored social events.

In its attempt to build environmental justice into its plan to site a federal interim storage facility, the Department will likely encounter local activist groups whose purpose is to protect the environmental resources of under-represented communities. In an effort to solidify a relationship between the Department and such groups, the Department should act as a medium to connect local environmental justice advocates

to that of a national or global network, bringing much needed high-level resources that will have a measurable impact on the social equity of individual communities.

Question 2

What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

Answer to Question 2

Co-locating multiple waste facilities in an area such as our HI-STORE CIS (proposed facility) located within 10 miles of the WIPP facility (operating), is a good idea because it would help develop a diversified workforce that is skilled handling and operating at waste processing plants in the Southeast Mexico region.

As stated in their letter to Governor Lujan Grisham [Appendix C], “we in southeastern New Mexico, suffer with the ups and downs of the oil industry, and this safe, secure storage facility will provide some 350 jobs as well as a \$3 billion capital investment in our area. While the Oil & Gas industry is very robust now, it is inevitable that with the number of electric vehicles on the road becoming larger and larger, the O&G industry will become smaller and smaller.” Building manufacturing and R&D facilities in the area will create jobs for the existing people in the area as envisioned by the leadership of Carlsbad and Hobbs as well as Lea and Eddy Counties.

Question 3

To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

Answer to Question 3

Our experience in New Mexico indicates that the success of the CIS is inextricably tied to the people’s belief that the Government is serious about building a repository. The Department would make the challenge of developing a CISF enormously easier by making progress on the repository issue. Please see the letter from Holtec and ELEA executives to DOE Secretary Granholm on this matter, dated September 21, 2021 (a copy of the letter is included as Appendix D).

The case for CIS:

We believe that the strong recommendation of the Blue-Ribbon Commission to establish one or two CIS facilities in the United States was soon adopted by the DOE that reflected the imperative of the CIS as a strategic necessity for the nation. The strategic need is twofold:

1. It would be near impossible to find willing host sites for new nuclear units unless America demonstrates to the 75 nuclear plant current host sites across the country that their high-level waste will not become a storage facility. This will lead to a continuing decline of the US nuclear industry and its ultimate demise while China and Russia fill the void. **America’s** strategic position as a global leader and supplier of small modular reactors, likely to be a new currency of international diplomacy, is precarious now and may slip away completely unless the nation shows it has solved the used fuel imbroglio.
2. We know that the current fleet of operating nuclear reactors were designed and built in the days when organized terrorism was not viewed as a credible threat. As a result, plants lack the structural capacity and systems to foil terrorist attacks. Having a large stockpile of fuel at these plants at their on-site storage facility, and especially in the water-cooled pools, becomes increasingly less desirable as the capacity for terror around the world continues to rise. Viewed from this prism of security, the vulnerability of the locally held stockpiles of used fuel adjacent to operating reactors

becomes evident. The CIS facility, located away from a reactor, would remove the security threat to our nation that hangs in the air.

We think that the above two factors should trump any economic calculus. However, it so happens that the cost of building, managing, and operating the CIS would be considerably less than managing 75 ISFSIs scattered over the country. We encourage the Department to consider its own study "Cost Implications of an Interim Storage Facility in the Waste Management System, Prepared for US Department of Energy Nuclear Fuels Storage and Transportation Planning Project, September 2016" as this report provides an evaluation of the cost implications of incorporating a consolidated interim storage facility (ISF) into the waste management system (WMS). The only cost element that skews the economics is the cost of transportation the loaded canisters to the CIS. Our calculations show that if the DOE were to assume the cost of transportation as a separate budget item, then the **Department's** outlay for storing the fuel at the CIS will actually decrease!

Another benefit of the CIS would be the availability of the subterranean storage technology which provides a quantum improvement in safety and security of the fuel. This technology was not available when most of the on-site storage systems were established at the operating plants; only two have the subterranean storage. At the CIS, the new technology for storing the used fuel canisters should be employed which would make the storage system incomparably safer from hazards that should be considered in the modern age.

Question 4

What other issues should the Department consider in developing a waste management system?

Answer to Question 4

Inaction is not an option. The substantial funds being paid from the Judgement Fund can be directed to **supporting a CISF that would immeasurably improve the security profile of the nation's used fuel storage** systems spread all over the country.

In 2012, the Obama/Biden administration convened the Blue-Ribbon Commission (BRC) on America's Nuclear Future. After almost two years of hearings throughout the United States, (including one meeting in Carlsbad to visit the DOE WIPP facility, the only licensed deep repository in the U.S. for defense transuranic waste disposal) the Obama administration came to a number of conclusions related to solving the problems of the "back-end" of the fuel cycle. Recognizing that a deep geological repository for HLW and SNF was already mandated in law, and the BRC concluded that one or more repositories would be needed. In addition, the BRC concluded that an integrated waste management system would benefit greatly from the construction of one or more "Consolidated Interim Storage Facilities" in the country. The BRC's rationale was that "developing consolidated storage capacity would allow the federal government to begin the orderly transfer of spent fuel from reactor sites to safe and secure centralized facilities independent of the schedule for operating a permanent repository.

The arguments in favor of consolidated storage are strongest for "stranded" spent fuel from shutdown plant sites. Looking beyond the issue of today's stranded fuel, the availability of consolidated storage will provide valuable flexibility in the nuclear waste management system that could achieve meaningful cost savings for both ratepayers and taxpayers when a significant number of plants are shut down in the future, can provide back-up storage in the event that spent fuel needs to be moved quickly from a reactor site, and would provide an excellent platform for ongoing R&D to better understand how the storage systems currently in use at both commercial and DOE sites perform over time.

There are 75 SNF storage sites at various utility sites in 35 states. The utilities and communities associated with the carbon free energy generation facilities had never expected to be long term storage facilities. The 1982 NWPA created "standard contracts" with the utilities for DOE to take title to the utility's SNF and move

it to a deep geologic repository by 1998. It is now more than two decades past the deadline for DOE to have a repository for disposal of the SNF. Every utility that has sued for breach of contract and compensation has won their suit. Every taxpayer is presently paying into the government settlement fund to pay the utilities for their storage costs of some \$1.3 billion annually. And, that liability is growing as more plants are decommissioned. An interim storage facility is a much more economically efficient way to store and manage the fuel as it cools in preparation for the repository. Educating Congress on the financial impact to the tax-payer by inaction and potential savings to the tax-payer by action will assist in accelerating movement in Congress.

The challenge for a CISF politically, in the absence of a repository, is the pushback by those opposing interim storage for fear a CISF will become a de facto permanent storage facility. It is unfortunately the case that there has been no significant progress made to site and build a deep geologic repository at this time by DOE. We strongly believe the Department can bring the affected state governors and Congressional delegations together to create a strong movement in Congress to solve the repository stalemate. A permanent repository is a critical infrastructure project if we are to get to 100% carbon free electricity generation in our country, which as we all know, will take base load, carbon free nuclear power to achieve the goal. Finland and Sweden are constructing permanent repositories. France and Canada are well on the way. This country should be able to do so as well.

We strongly believe the Department can bring the affected state governors and Congressional delegations together to create a strong movement in Congress and the Department to solve the repository problem. We implore you to begin the search for a repository location. This is a critical infrastructure project if we are to get to 100% carbon free electricity generation in our country, which as we all know, will take base load, carbon free nuclear power to achieve the goal.

From: Abigail Johnson
Sent: Thursday, March 3, 2022 9:19 PM
To: Consent Based Siting
Subject: [EXTERNAL] Docket # DOE-HQ-2021-0032

March 4, 2022

Office of Spent Fuel and Waste Disposition
Office of Nuclear Energy
U.S. Department of Energy
consentbasedsiting@hq.doe.us

RE: Docket # DOE-HQ-2021-0032 Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Fed. Reg. 68,244 (Dec. 1, 2021)

It is encouraging that DOE is considering consent based siting for federal interim storage facilities. But it seems to be doing so in a parallel universe, not connected to real events. The private fuel storage proposals for Texas and New Mexico are underway, without consent of either state. The Blue Ribbon Commission on America's Nuclear Future supported consent based siting in concept and as an essential part of siting. Yet the two proposed interim storage facilities and the law of the land proposed repository at Yucca Mountain were developed without consent.

I have been involved with nuclear waste issues for nearly 40 years. I believe that it is essential for Congress to remove the Yucca Mountain repository from the Nuclear Waste Policy Act and also legislate consent based siting. Congress should also follow the BRC recommendation to replace DOE as the program manager and instead create a different management authority not beholden to annual appropriations and more invested in solutions rather than defending past decisions. The culture of DOE must change along with the times. These changes are integral to whatever comes of this latest RFI process that DOE is undertaking.

Consent based siting is important but if it goes forward while sites without consent are being developed or are still considered to be the "law of the land," the RFI process and all that follows will be flawed.

Thank you for considering my point of view.

Abigail Johnson

[REDACTED]

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From: Heather Westra
Sent: Thursday, March 10, 2022 6:58 AM
To: Consent Based Siting
Subject: [EXTERNAL] Comments from the Prairie Island Indian Community (MN)
Attachments: PIICCBSlettertoPettry.pdf



Attached please find comments from the Prairie Island Indian Community regarding the Department of Energy's request for information regarding the development of a consent-based siting process for siting a federal interim storage facility for spent nuclear fuel.

Heather Westra?

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Johnny Johnson
President

Valentina Mgeni
Secretary



Shelley Buck
Vice President

Michael Childs Jr.
Treasurer

Cody Whitebear
Assistant Secretary/Treasurer

March 9, 2022

Dr. Kim Petry
Acting Deputy Assistant Secretary for Spent Fuel and Waste Disposition
U.S. Department of Energy
Office of Nuclear Energy
1000 Independence Avenue, SW
Washington, DC 20585

Submitted via consentbasedsiting@hq.doe.gov

Subject: Prairie Island Indian Community's Response to DOE's RFI on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Fed. Reg. 68,244 (Dec. 1, 2021)

Dear Acting Deputy Assistant Secretary Petry:

The Prairie Island Indian Community ("PIIC," "the Community," or "the Tribe") offers the following comments regarding the Department of Energy's ("DOE" or the "Department") Request for Information (RFI) on using a consent-based process to identify Federal sites for the storage of spent nuclear fuel, as noticed in the Federal Register on December 1, 2021 (86 FRN 68244).

The Prairie Island Indian Community is a federally recognized Indian tribe organized under the Indian Reorganization Act of 1934. The Tribe's Reservation is located on the ancestral homeland of the Mdewakanton Dakota on Prairie Island, which is formed at the confluence of the Vermillion and Mississippi Rivers in southeastern Minnesota (approximately 35 miles southeast of the Twin Cities of Minneapolis and St. Paul, Minnesota). The Mdewakanton, "those who were born of the waters," have lived on Prairie Island for countless generations. The Tribe's current land base (including both trust and fee lands) has grown through various

federal acts beginning in 1891 and direct purchases by the Tribal Council, and now totals over 4,500 acres (including both land and water).

The Prairie Island Indian Community is governed pursuant to its Constitution and By-Laws, adopted by tribal members on May 23, 1936, and approved by the Secretary of the Interior on June 20, 1936. The Constitution and By-laws provide that the Community Council (sometimes referred to as the "Tribal Council") shall be the governing body for the Community. The five-member Tribal Council consists of a President, Vice-President, Secretary, Treasurer, and Assistant Secretary/Treasurer.

Immediately adjacent to our homeland is the Prairie Island Nuclear Generating Plant (PINGP), which is owned and operated by Northern States Power Company d/b/a Xcel Energy ("Xcel"). The PINGP has been on-line since the early 1970s and will operate at least until 2034 (there is a possibility of a ten-year license renewal to allow Xcel meet the company's 2030 carbon reduction goals). Xcel has been storing spent nuclear fuel on-site at its Independent Spent Fuel Storage Installation (ISFSI) since 1995. The Nuclear Regulatory Commission (NRC) approved Xcel's application to renew the ISFSI license for an additional 40 years in 2015 and in 2020 approved Xcel's license amendment request to expand the capacity of the ISFSI. (map below).

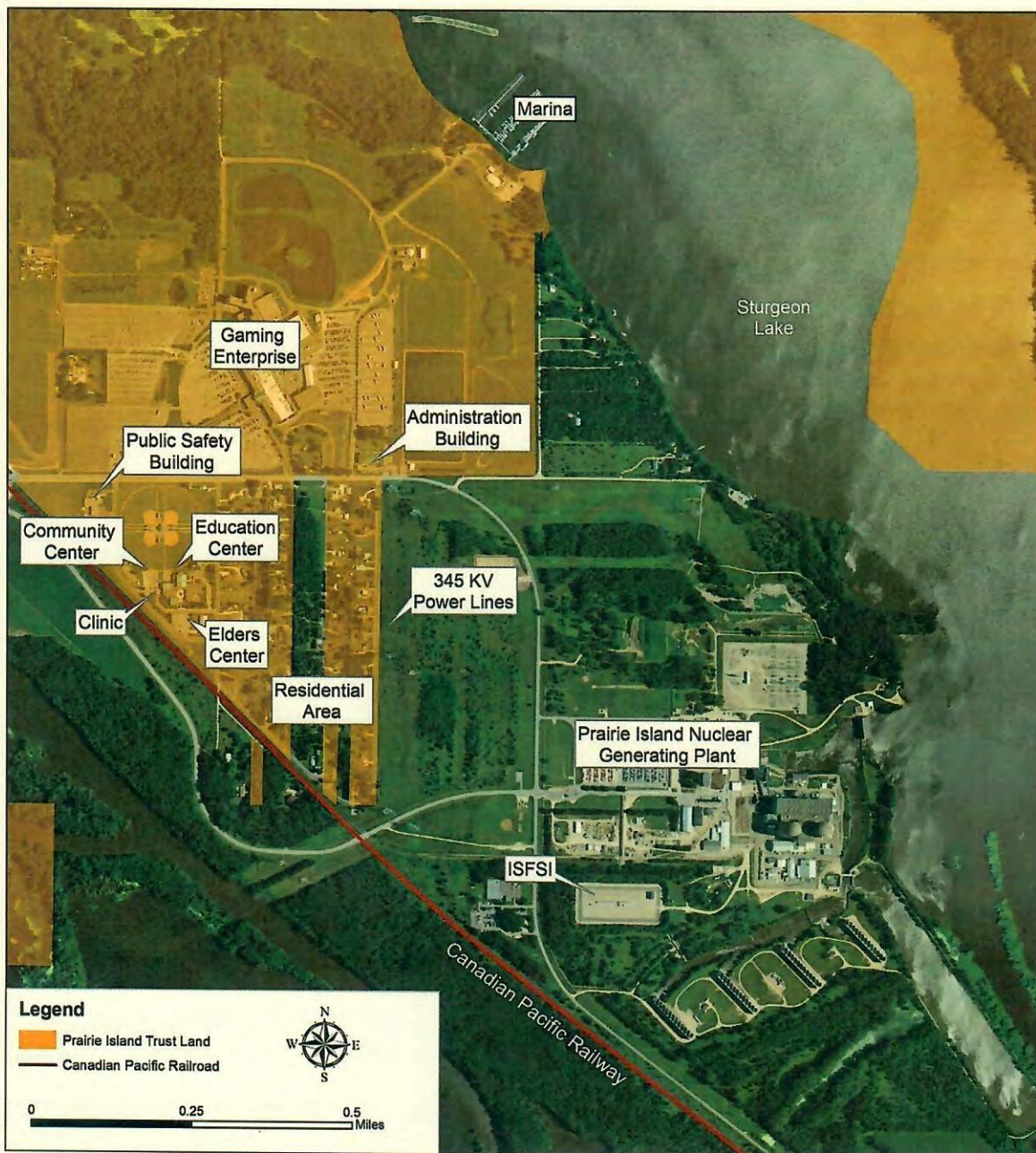


Figure 1.

The ISFSI and its 47 dry casks are less than 700 yards from the nearest Community residences. The PINGP has been a constant source of concern to the PIIC since it went on-line since the early 1970's. The tribe had no role in the siting, licensing or construction of the power plant, nor does the tribe benefit from the plant's continued operation (i.e., expanded tax base).

There is no community in the United States closer to a nuclear power plant than ours.

There is no issue more important to the PIIC than the continued operation of the PINGP and the indefinite storage of spent nuclear fuel at the ISFSI.

When the PINGP was originally licensed in the 1970's, it assumed that the spent nuclear fuel would be sent to the Department of Energy's (DOE) West Valley facility for reprocessing (at that time it was called the Nuclear Fuel Services Processing Plant). There was no other mention of PINGP spent nuclear fuel in the original licensing documents.

On April 7, 1977, President Jimmy Carter announced that the United States would defer indefinitely the reprocessing of spent nuclear reactor fuel due to non-proliferation concerns. Although President Reagan lifted this ban in 1981, reprocessing has never been economically viable in the United States (i.e., it's cheaper for utilities to buy virgin uranium than to purchase reprocessed fuel).

Congress passed the Nuclear Waste Policy Act (NWP) of 1982, creating a timetable and procedures for establishing a permanent, geologic repository for high-level radioactive waste and spent nuclear fuel from commercial nuclear power plants. The NWP was amended in 1987 to name Yucca Mountain as the sole repository site for the permanent disposal of spent nuclear fuel and high-level radioactive waste and established a process for its characterization by DOE and for its independent, scientific review and licensing by the Nuclear Regulatory Commission (NRC). By law, the repository should have been operational by 1998 and Department should have been accepting spent fuel.

Because of delays in opening Yucca Mountain, mainly due to the lack of appropriations, most utilities, like Xcel Energy, had to develop on-site storage as a temporary way of keeping their plants operational until Yucca Mountain could begin accepting waste. When the ISFSI at Prairie Island was initially proposed, in the early 1990's, it was to be temporary measure, only for a few years, to keep the plant running and plant personnel working, until Yucca Mountain could be opened. We, along with countless others, expressed our concerns regarding the long-term storage of spent fuel in dry casks and the possibility that the waste would never leave Prairie Island. We understood then that the ISFSI was to be an interim or temporary solution until the national repository, Yucca Mountain, could begin accepting waste.

In 2010 President Obama established The Blue Ribbon Commission (BRC) on America's Nuclear Future to develop a path forward for addressing with spent nuclear fuel and high-level waste that did not include Yucca Mountain. The BRC issued its report, with eight recommendations in 2012; the Department issued a Strategy to implement the BRC's recommendations in 2013, complete with timelines and other goals. One of the BRC's recommendations was that any effort to site a storage facility or repository must use a consent-based process. From December 2015 until July 2016 the DOE held a number of public meetings soliciting input of what a consent-based siting process might look like and how it would work. The DOE issued a report in 2017 summarizing its efforts to develop a consent-based siting process. Between 2017 and December 1, 2021 nothing was done to solve the Nation's spent nuclear fuel problem.

These shifting dates, timeframes, approaches have eroded confidence that a national repository will ever be in our lifetime and in fact, have done much to frustrate host communities, like the Prairie Island Indian Community. We fear that this latest effort, even if implemented quickly, will not result in the movement of spent nuclear fuel from Prairie Island for at least another decade.

We highlight this history because it's important to understand the position of the current (and unwilling) host communities impacted by stranded spent nuclear fuel. All commercial nuclear utilities entered into standard contracts with the DOE that specify that the Department has responsibility to dispose of spent nuclear fuel and high-level radioactive waste, as well as taking title to it. The NWPA specified that the disposal facility was to be available by 1998. The commercial nuclear utilities were to pay for the preparation, transportation, and the disposal of spent nuclear fuel via fees collected from their ratepayers. The Nation's electric utility customers have paid well over \$40 Billion for the disposal of spent nuclear fuel via fees into the Nuclear Waste Fund (NWF). Minnesota customers have paid \$940 million, with nothing to show for it other than stranded spent fuel at two power plants.

The commercial nuclear utilities have been able to sue the federal government for failing to remove spent nuclear fuel from commercial reactor sites, as required by the NWPA and specified in the Standard Contracts. According to a September 2021 General Accounting Office's (GAO) report to Congress, the Federal government has already settled over \$9 Billion in damage lawsuits from utilities. It is estimated that the remaining liability might be \$30.6 Billion (depending on when the Department can move fuel).

The utilities recovering costs for on-site storage can return the funds to their customers or expand their decommissioning trust funds. The utilities recover their costs and are "made whole." But what about host communities with stranded spent fuel in their backyards? What recourse do we have, other than to wait for the federal government to act?

Overarching Comments

We have a number of comments that cut across many of the questions posed in the Federal Register Notice (FRN).

Tribal Sovereignty and Self-Determination

A tribal homeland (or land base) is an essential element of tribal sovereignty. Tribal territories form the geographical limits of each tribe's jurisdiction, are the basis of the tribe's economy and are an irreplaceable forum for cultural vitality, based on the sacredness of land. Fully functioning tribal governments possess four distinct and interrelated attributes of sovereignty: a secure land base, self-government, functioning tribal economies, and cultural vitality. In essence, a tribe's land base is the linchpin to its existence and autonomy as a sovereign entity.

As dependent nations with sovereign rights, tribes have the right of self-determination. As such, a tribe has the right, to determine for itself, without state intervention, whether hosting a federal spent fuel storage facility is right for its citizens. The federal siting process must recognize that state approval is not required if a tribe wishes to enter negotiations with the federal government to hosting a storage site. A tribe may choose to include a state in those negotiations because its mutually beneficial for both parties, but it should not be required. The DOE siting process must recognize and uphold tribal sovereignty at every step of the siting process.

Trust Responsibility and Consultation

One of the foundational principles of Indian law is that the federal government has a trust responsibility to Indian tribes. Federal trust responsibility entails legal duties, moral obligations, and the fulfillment of understandings and expectations that have arisen over the entire course of the relationship between the United States and federally recognized tribes.

The Department's consent-based siting process must recognize and abide by the unique obligations the federal government has with federally recognized Indian Tribes. Numerous federal agencies have policies in place recognizing tribal sovereignty and affirming this trust responsibility, including the DOE (i.e., DOE Order 144.1, which governs all agency officials, staff and contractors with their interactions with federally-recognized Indian tribes).

Under Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, each Federal agency is required to engage in government-to-government consultation with American Indian Tribes. These government-to-government relationships recognize tribal sovereignty and allow an opportunity for tribal officials to give timely input in the development of regulatory policies affecting the Tribe. Furthermore, in a government-to-government relationship, a tribe has a recognized right to protect the health, safety, and welfare of its citizens. EO 13175 requires each Federal agency to have an accountable process to ensure meaningful and timely input by tribal officials in the development of regulatory policies that affect the Tribe.

As soon as potential host sites are identified, the Department must determine which tribe(s) might be impacted by the eventual siting and the construction of the facility and begin the consultation process. Federal consultation must be meaningful, done in good faith, and entered into on a government-to-government basis. DOE must also recognize that tribal interests are not limited to reservation boundaries; consultations should include consideration of tribal Trust

Lands, ceded territories, treaty rights areas, and culturally affiliated areas in addition to reservation lands.

New Independent Federal Organization

To successfully site a federal spent fuel storage facility or facilities, using a consent-based process, a new agency must be established and be removed from the DOE and established under a new federal authority, as recommended by the Blue Ribbon Commission in their 2012. The DOE is subject to changing Presidential priorities and Congressional appropriations. The Nuclear Waste Fund was established to pay for the development and operation of a federal repository. Because appropriations from the NWF are subject to Congressional oversight, Congress has been able to withhold funding for Yucca Mountain, thus stalling the project and effectively ending the program in 2010. Funding for the activities of this federal organization must not be subject to the current Congressional appropriations rules and fees paid into the Nuclear Waste Fund must be reclassified as offsetting collections.

Because establishing a new federal agency will require Congressional action (and time), there are interim steps the DOE can take now to achieve this goal. The DOE should consider establishing a new Nuclear Waste Policy Office, which would report directly to the Secretary of Energy. The director and staff for this new office would be nationally and internationally recognized experts in handling socio-political, intergovernmental, and infrastructure challenges.

Need to Inform Congress

Since Congress directed the Department to initiate this consent-based siting effort as well as directing the development of a repository through the NWPA, the Department should report to Congress the findings of this effort, including any barriers to timely implementation. Barriers will be discussed further in this letter, but lack of consistent funding from the Nuclear Waste Fund and a repository could be barriers to successfully developing a federal storage facility.

Request for Information Questions

Below we provide responses to questions posed in the RFI, where we have expertise.

Area 1: Consent-Based Siting Process

Process Question 1: How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

The Department should do more than consider social equity and environmental justice. Social equity and environmental justice must be baked into the site identification process. The DOE should develop a list of technical and social criteria that will be used to identify (or reject) a potential site. Community support for an interim facility should be “deep and broad.”

Identify minimum technical specifications—minimum number of acres, relatively level, geological factors, access to railhead.

Identify social factors, such as whether a potential host site is already disproportionately impacted by other facilities. Are there a disproportionate number of industrial facilities in a proposed area?

Determine the percentage of minorities and low-income populations in a proposed site.

By establishing basic site selection criteria, a community could determine whether hosting a federal interim storage site would be suitable.

Process Question 2: What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

As we mention above, Indian tribes have the right to self-determination and the right to determine, for them selves, whether such a facility is appropriate. The Department must recognize this and work with interested tribes accordingly.

Process Question 3: What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

The Department should consider developing an incentive package that could include developing related facilities, educational and work force development, as well as any needs identified by the potential host community. It’s up to each potential host community to define for themselves any needed benefits.

Process Question 4: What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

The lack of a federal repository is a huge barrier for potential host communities. Why would any potential host community agree to operate a storage site without a firm end date?

Relatedly, the lack of consistent annual appropriations from the Nuclear Waste Fund contributed to the delay in completing the Yucca Mountain license application.

Process Question 5: How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

If there is considerable progress toward developing a repository, then will be reasonable assurance that spent fuel won't be stranded in a potential host community. The DOE should be honest and upfront regarding the availability of a repository within this century.

Process Question 7: What other issues, including those raised in the Draft Consent-Based Siting Process should the Department consider in implementing a consent-based siting process?

As detailed above, the Department should consult current host communities. No one asked the Prairie Island Indian Community whether we consented to hosting stranded spent nuclear fuel indefinitely. The spent nuclear fuel is stranded because of Department inaction and lack of funding. We have no idea for how long the spent nuclear fuel will be in our backyard. We do know that the Prairie Island ISFSI was NOT proposed as a long-term storage site. We have a number of unanswered questions:

Do current NRC regulations for dry cask storage consider long-term (50, 100, 200, 300 years) storage?

Have the health, safety, and environmental consequences of long-term storage been considered?

How long can these casks be used? Were these dry casks designed for long-term storage (i.e., greater than 100 years)?

Since it will potentially take decades to develop a new federal storage site, will the DOE or the NRC be evaluating the long-term use of dry casks?

What assurances can the DOE give host communities that long-term (50 to 300 years) use of dry casks will not present problems?

How will problems with dry casks, such as unloading and re-loading casks that develop problems be addressed, particularly at decommissioned sites where there are no longer are spent fuel storage pools?

Will host communities such as the Prairie Island Indian Community be provided with adequate funding to address the unique public safety, emergency preparedness, and emergency response risks and demands associated with the dry cask storage facilities, while waiting for a federal storage facility?

The Department should work with the NRC to answer these questions, not only for current host communities, but also those communities interested in potentially hosting a federal storage facility.

Area 2: Removing Barriers to Meaningful Participation

Participation Question 1: What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

One barrier is a lack of trust and confidence in the Department. A recent and unfortunate example is the 2016 plan to drill two boreholes in the North Dakota granite without community notifications. Residents found out about the project via a newspaper article. The Department must meet with the public as a first step, before any action takes place.

Participation Question 2: What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

Funds should be provided to potential host communities so they can determine for themselves whether it is right for them. Resources will be needed for technical and social studies, expert opinion, legal support and on-going community meetings.

Participation Question 4: How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

Whether a tribe is contemplating hosting a federal facility or if a potential facility is adjacent to tribal lands and resources, the Department must work with tribal governments on a government-to-government basis.

Area 3: Interim Storage as Part of a Waste Management System

System Question 1: How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

The Department should do more than consider social equity and environmental justice. The Department should avoid siting the facility in a community that is already disproportionately impacted by industrial facilities.

System Question 3: To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

It's a MUST have. It will be very difficult for any community to contemplate hosting a spent fuel storage facility if it is perceived to be an endeavor without an end-date.

We thank you for this opportunity to provide comments on this important endeavor. In moving forward, if we can assist in anyway, we would be glad to help.

Respectfully submitted,



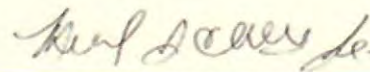
Johnny Johnson
President



Shelley Buck
Vice President



Valentina Mgeni
Secretary



Michael Childs Jr.
Treasurer



Cody Whitebear
Assistant Secretary/Treasurer

From: RJohnson
Sent: Thursday, March 3, 2022 9:22 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

Roger Johnson, PhD

Professor Emeritus

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Area 1: Consent-Based Siting Process

1. Environmental justice demands that a CIS should not be located in any state where nuclear test explosions have taken place. That would eliminate Arkansas, Colorado, Mississippi, New Mexico, and Nevada. Nevada in particular should be exempt because the state does not produce nuclear power waste but more importantly it has already suffered from 1,021 nuclear test explosions. Colorado should be exempt not only because of the Rio Blanco and Rulison nuclear explosions but also because of the enormous death and destruction from all the uranium milling and mining contamination. Read *The Uranium Widows* here: <https://www.newyorker.com/magazine/2010/09/13/the-uranium-widows>

2. Local governments should have a stronger say in siting than state officials who may be hundreds of miles away and whose political interests may be entirely different. But the focus should be on the will of the local people with “local” meaning something like the 50 mile or 100 km radius. In addition to local governments or tribal leaders, additional attempts should be made to determine the will of the local population. Sometimes the current political leaders have conflicting personal interests, political loyalties, or financial ties. Considerable effort is needed to ascertain the true will of the people affected. Special care should be taken to insure that powerful outside interests with huge resources are not biasing the discussions.

3. The main incentives are (A) guarantees of safety; (B) massive support in the case of an accident; (C) total compensation for loss in the event of an accident; (D) huge financial benefits to the area, especially with regards to schools, health care, public recreation, housing, transportation, and other economic benefits.

4. The barriers to successful solutions would be interference from politicians, the military, heavily biased government agencies such as the NRC, powerful lobbying groups such as the NEI, or well-funded nuclear industry special interest groups.

5. Enormous efforts have to be mounted immediately to educate the public in a totally unbiased manner. The DOE should not be the one to do this since the agency repeatedly uses its office to promote nuclear power including calling it clean and safe and recommending creating even more nuclear waste in direct conflict with the tone and mission of this RFI. Because of the enormous half-century public relations efforts by the nuclear industry, the public is poorly informed and regularly swamped with heavily biased media efforts. Any effort by the DOE to take over this mission will severely undermine its entire effort to be fair and objective. Perhaps this effort could be assigned to scientists at the National Academy of Sciences.

6. The DOE is making a huge mistake by limiting its consideration to “communities,” as Dr. Kim Petry did in her presentation recently at a Southern California Edison webinar. Some of the best CIS sites may not be communities at all. For example a deserted island such as that now being turned into a permanent repository in Finland. It might be located on a mountain or in a remote patch of wilderness. Perhaps a CIS could be located on an uninhabited military installation such as a large deserted bombing or gunnery range where no one lives, such as Chocolate Mountain in California. The San Onofre nuclear power plant, now a de facto CIS, has long been operating on a military base (Camp Pendleton).

7. Threats to a just and fair solution include the DOE ‘s close ties to the special interests of the nuclear industry. This danger is evidenced by recent statements of top DOE officials who continue to promote the interests of the nuclear industry with irresponsible casual references to nuclear waste as being “clean” and a solution to climate change. Many worry that this entire process is clouded by the DOE being used by the powerful nuclear industry to promote its own interests. You CANNOT ignore the front end of nuclear power, all the widespread radioactive contamination and widespread health problems caused by mining and milling. You CANNOT ignore all the radioactive contamination discharged into the atmosphere and oceans and waterways during reactor operation. You cannot ignore new evidence that uncontrollable tritium may be harming the public. It is widely known that nuclear energy is the most expensive, the most unreliable, the most dangerous, and the most environmentally destructive form of energy production. If the purpose of finding safe storage of nuclear waste is to further the production of more nuclear waste for the financial benefit of the nuclear industry, this will reflect badly on the DOE and harm the public.

Area 3: Interim Storage as Part of Waste Management

4. (A) The DOE can I improve a fair and open process by establishing clear criteria for the selection of possible CIS sties. The criteria should be (A) population density; (B) seismic stability; (C) likelihood of extreme events such as tsunamis, flooding, wildfires; (D) likelihood of terrorist attacks from land, sea, or air; (E) infrastructure including railroad and highway access; (F) adequate work force; and G) transportation ease and safety plus distance from spent fuel locations. In order to remove possible prejudice and bias, the DOE should be careful to exclude possible sources of bias including considerations or religion, race, politics, payback, involvement of special interests, or desire to harm particular groups.

To use one example close to home, San Onofre (with 1,773 tons of nuclear waste) is officially located in my home town of San Clemente zip 92672. It is half way between two major metropolitan areas (Los Angeles and San Diego) with over 15 million people living within the 100 km radius. *This area has 7-8 times as many people exposed to danger as the entire state of New Mexico.* And if social equity is a factor, a study by the University of San Diego revealed that San Diego County has more Native American Indian tribes than any other county in the country. But statistics like this can be misleading and such considerations should not be used in locating a CIS.

(B) There should be 5 regional sites: Northeast, Southeast, Midwest, Northwest, Southwest. The DOE can assist the selection process by applying an objective analysis based on (A) above. DOE analysts should begin by listing areas of the country and weighting them. Most areas will be quickly eliminated. Some areas may offer possibilities and a few will rank high on all the criteria. Once identified, work can proceed to narrow down candidates according to the findings of this RFI.

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Use caution if this message contains attachments, links or requests for information.

From: RJohnson
Sent: Sunday, March 6, 2022 5:52 PM
To: Consent Based Siting
Subject: [EXTERNAL] Response to RFI request

Response to Area 3 Questions

Timetable and guidelines for establishing CIS sites

1. In order to reduce long nuclear waste travel distances there will be 4 CIS sites, one in each of the four NRC regions: I. North east; II. Southeast; III. Midwest; IV. West.
2. The National Academy of Sciences will be charged with creating a panel of scientists and independent experts to evaluate possible locations for these CIS sites. Specifically, the task will be placed with the Nuclear and Radiation Studies Board unit of the division on Earth and Life Sciences.
3. Among the criteria to be evaluated will be (A) population density; (B) seismic stability; (C) extreme events such as tsunamis, flooding, hurricanes, and wildfires; (D) local issues such as ability to construct rail spurs/access roads and a work force to build, maintain, and secure the CIS; (D) local and regional consent; (E) historical factors such as previous contamination from mining, milling, nuclear reactor operations, nuclear weapons testing, or other forms of radiological endangerment; (F) transportation issues; (G) procedures for making final determination of CIS sites. (H) recommendations for procedures to identify possible permanent repositories.
4. Research on all eight factors will begin immediately and the panel will issue its report to the DOE by the end of 2023. The DOE will issue a final decision before 2026 after which construction will be begin. Shipments of nuclear waste to the CIS sites will begin in 2029.

Roger Johnson, PhD
Professor Emeritus



March 4, 2022

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From: Andrew Kadak
Sent: Thursday, February 3, 2022 8:36 AM
To: Consent Based Siting; Andrew Kadak; Andrew Kadak
Subject: [EXTERNAL] Comments on the consent based process
Attachments: Comments on Consensus Process for Storage and Disposal of Spent Fuel -KADAK.pdf

Hello,

Attached are my comments on the proposed process. If you have any questions, I would be happy to engage.

Andrew C. Kadak, Ph.D.

Former member of the Nuclear Waste Technology Review Board and former President of Yankee Atomic Electric Company now hosting DOE's spent fuel and getting paid to do it.

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Comments on Consensus Process for Storage and Disposal of Spent Fuel
and High Level Nuclear Waste

Andrew C. Kadak, Ph.D.

February 2022

1. There does not seem to be a definition of what consensus is. Without this definition or establishing a process that is sustainable, achieving consensus is not possible.
 - a. By whom?
 - b. What authorities
 - c. Regulatory agencies
 - d. Local government
 - e. Non-government organizations
 - f. Sovereign nations
 - g. Counties
 - h. States
 - i. Federal Government
 - j. All of the above???

This is the challenge of such well meaning words.

2. The local government and state must be the minimum set for “consensus”. This is becomes a political process which has been shown to be unstable since one governor may support the project to be followed by another who opposes it making it virtually impossible to make sustainable progress. There needs to be a formal legally enforceable contract mechanism that codifies the process.
3. Regulatory agencies provide some stability in that they have regulations and rules that need to be followed to allow for any facility to be built. The lead regulator for nuclear projects is the Nuclear Regulatory Commission. The federal Environmental Protection Agency also has a role as do some state agencies. Federal preemption rules may override local and state laws in certain aspects. However, as experience has shown, even with an NRC license, the facility may be blocked by state or legal actions.
4. States have many ways to thwart the process by denying permits, access rights, etc.
5. State legislatures may pass laws (as some have done) to prohibit storage and disposal of spent fuel or nuclear waste providing yet another opportunity to block any such facility. This is another source of instability in the process. It is likely that this is one of the reasons that the Nuclear Waste Policy Act of 1982 included a congressional override of a state’s rejection despite meeting all the other federal requirements for siting.

6. Past experience with a volunteer consensus process occurred when a Nuclear Waste Negotiator was charged with finding an interim storage site for spent fuel. David Leroy and his successor both failed in their efforts at getting a state to agree to host such a facility. The lessons learned from that failed experience have NOT been applied to the new consensus process. The basic problem was no state wanted to have what may end up being a permanent storage location and political opposition to the idea. Recall that by law (1987 Amendment to the Waste Policy Act), the Nuclear Waste Negotiator's position was an independent office, not reporting to DOE but to the President of the United States and Congress. In the last series of efforts by the negotiator, both the President and members of Congress interfered with the local decisions to site a facility deliberately preventing their development.
7. The lessons learned by the past failure of volunteer siting have not been learned or applied to the new proposed consensus process. They should be. The best example of why the consensus process is flawed is revealed in a rejection letter by then Governor Sullivan of Wyoming denying Fremont County Commissioners the right to apply for the next phase of the "volunteer" siting process for the Monitored Retrieval Storage (MRS) facility which local people supported. The "reasons" given were:
 - a. The next phase was to provide funds to conduct an education effort leading to an obligation to identify sites and secure the government agreement to negotiate. He did not want that to happen.
 - b. Concern that it will be a federal project controlled by them not by the state.
 - c. Despite the provision that the final agreement will be the subject to a vote by the residents of Fremont County, the Governor believes it is a statewide issue which the local residents have no standing.
 - d. Concern that the local population cannot stand up against the federal government in negotiations.
 - e. Concern about the general siting of MRS's
 - i. He thinks it should be in the East where the nuclear plants are
 - ii. No assurance that the storage would be temporary since Yucca Mountain is not yet sited or assured (he was right on this one)
 - iii. DOE's record in operating nuclear facilities in the West
 - iv. Lack of trust in the federal government to negotiate a fair deal to protect the citizens of Wyoming
 - v. Risk of business loss due to the presence of an MRS
 - vi. No guarantee that the federal government will stand by any agreements
 - vii. Spent fuel can be safely stored at existing nuclear plants for years so why move it twice to a final repository when it becomes available.
 - viii. He does not trust the federal government or utilities to protect the interest of Wyoming citizens.

It seems pretty clear to me, that any governor can write the same letter today and tomorrow.

8. What typically occurs in the siting process is that the local governments support the siting, but opposition from county and state leaders kills the project (as described above)
9. Presently there are two active **private** interim storage siting projects that are under Nuclear Regulatory Commission review. Holtec's Consolidated Interim Storage in New Mexico and Interim Storage Partners in Texas. NRC has issued a license to the Texas facility but the legislature passed a law banning the interim storage of spent fuel which the Texas Governor signed. It should be recalled that the prior Texas governor supported the project. New Mexico already hosts the Waste Isolation Pilot Plant (WIPP) for disposal for plutonium contaminated waste. New Mexico's attorney general also sued NRC over licensing of Holtec's facility claiming it is "fundamentally unfair for our residents to bear risks of open-ended uncertainty". The WIPP project was licensed by the Environmental Protection Agency using their legislative not adjudicatory process that the NRC uses. WIPP took 10 years or so with an agreement reached with the governor (Richardson) allowing for state oversight. That process seemed to have worked. The EPA process is quite different.
10. In the US, under the nuclear waste negotiator process, many sites were proposed but none made it to development for different reasons:
 - a. Freemont County - already discussed
 - b. Skull Valley Goshute – Utah – received an NRC License, but
 - i. Killed by President Bush declaring land around the site a wilderness area removing ability to move spent fuel to the site
 - ii. Opposed by Congressional delegation - Sen. Hatch
 - iii. Bureau of Indian Affairs (fed agency) refused to grant the land lease
 - c. Mescalero Apache Tribe – New Mexico
 - i. Killed by Congressman Bingaman to stop funding the Office of the Negotiator
 - ii. Tribe continued but tribe then reversed vote to accept out of frustration.

There is so much more to each story but the bottom line is that the so-called volunteer siting process without some guarantees in contract form, will all fail since they are all subject to reversal at many levels.

11. The political reality of siting controversial facilities which are easily manipulated using disinformation and fear by advocacy groups is not just difficult, but impossible. What is needed is bold leadership which, unfortunately does not exist. See David Leroy's testimony (Transcript beginning on p. 376) before the Blue Ribbon Commission.
12. Successes in siting a waste disposal facility are Finland and Sweden. A careful review of the siting process and final decision to host the repository reveals that the sites finally selected were those near existing nuclear power plants whose geology was found to be acceptable after years of study. The local governments supported the projects since they were already familiar with nuclear operations and directly benefited by the disposal project.

13. Another key difference is that the federal government was not charged with the responsibility for disposal but rather private companies in each country were formed to site, build and operate the repositories. The private companies were subsidiaries of the nuclear power companies whose responsibility it was to find a host community, conduct the research for appropriate technologies and get regulatory approval and finally build and operate the repository. The final approval was to be granted by the regulatory agencies and approved by the national parliament. Thus, once the safety and local authorities were satisfied, it was assumed that the legislators would approve. Obviously not everyone in each community was supportive but the majority of people in the community did. Also obviously, local election results can change the political support in both countries. What was clear in the legislative process and the nation as a whole is that the people recognized the social responsibilities for disposal of nuclear waste generated in their country. This social responsibility is lacking in the US.
14. There appears to be consensus that for any state that hosts an interim storage site is that the fear that it will become a permanent site for storage since no progress is being made in building a repository. A pre-condition is that a waste disposal site be available (or progress towards one) prior to an agreement to host an interim storage facility. At present, unless Yucca Mountain is restarted showing that it could be available, **it will take at least 25 years to get to the same point** that Yucca Mountain was when it was politically canceled by Obama after the NRC review concluded that it was safe and feasible.
15. A big problem right now is the Waste Policy Act, which no one appears to want to change, needs to allow the DOE to build an interim storage site or negotiate with one or both of the private initiatives to store the spent fuel.
16. The only success with DOE (the federal government) has been the contract that the Waste Policy Act requires with each utility to take the spent fuel by 1998. This contract is binding and enforceable to the degree that the government now pays utilities to store the spent fuel on their sites due to the breach of the contract in that they did not take spent fuel as required in 1998. This might be the only way to assure performance for the states, local governments and other entities.

What Might Work

Based on this experience, it is quite clear that without the support of the Governor of the host state, no siting of an interim storage site or repository is possible

The Blue Ribbon Commission's report, as expected, now sits on shelves with no credible results due to the lack of leadership at all levels. The industry is content with getting paid to store its spent fuel, the DOE does not have the budget or legislative authority to site an interim storage facility, the spent fuel is safely being stored which has not yet become a crisis situation, local communities and states complain but are not willing to do anything, anti-nuclear groups want the spent fuel moved from the nuclear sites

but are not willing to discuss where or how, private interim storage initiatives are being opposed by the state governors and legislatures and law suits, etc.

The time has come to have a serious discussion with state leaders (governors, legislators, activist groups, local communities, etc) to come up with a credible plan which all will sign up for allowing the process of siting to proceed.

While the Yucca Mountain siting process was politically interrupted, if we are going to meet the expectations of the host community and states that the interim storage site will not be permanent, we need to have a path forward on siting a repository **in the near term** otherwise we are wasting time and money on **consensus**. The only possible option is to restart the Yucca Mountain licensing process and go to the hearings which were cancelled. We can then at least show that there might be a path to a repository to address one of the major obstacles. While this is politically and perhaps even technically difficult due to the years that have gone by, it is worth the effort since it will surely be shorter than finding a new site which in the end will end up at the same place as Yucca Mountain (**dead**). The only hope is for a near term solution to interim storage is to complete the YM licensing process by going to adjudicatory hearings of NRC's safety and environmental reports.

For this to happen politically, there needs to be consensus on the need to be socially responsible for the nuclear waste in over 50 years of nuclear generated electricity. There is no such consensus now. I would propose a conference of governors (the leaders), leaders in the House and Senate, key NGOs and the DOE leadership who are willing to solve the problem to come up with a binding agreement (contract) about the process. The conference would be hosted by the President. This conference would not be concluded until they come up with a process that leads to a siting decision that each governor or state legislature will not oppose it if turns out their state is selected for an interim storage site. (again, on the assumption that YM will proceed to licensing so that there is a path forward) This would be part of the agreement.

If Nevada agrees, another state or states would agree to host the interim storage sites. If Yucca Mountain is eventually licensed, a interim storage site may not be needed or fewer regional ones would be built. Getting the spent fuel moved should only happen at most twice, ideally once. Building an interim storage facility is not difficult. Every nuclear plant has built one. Clearly, it is not as difficult as a repository. Also, it is likely cheaper for the federal government to pay for storage at one or two locations versus paying each utility to store the spent fuel on their sites which is presently being done now. The Federal (taxpayer) obligation could exceed \$ 50 billion.

To prepare for such a meeting, draft proposals should be developed for consideration. The scope should be more than just spent fuel since each state would have some facilities that they would like to have in another state so the negotiation about which state gets what would be part of the final pact.

In terms of which organization should be responsible for siting, designing, building and operating a repository, it would ideally be an independent joint agency consisting of utilities and government as proposed by the BRC. The Nuclear Waste fund should be transferred to this agency out of control of Congressional appropriations but with financial oversight. It is important to establish trust in the process and the organization which means it cannot be political.

Conclusions:

Unfortunately the consent process as presently formulated and tried in the past will not work for many of the reasons stated above. Convening yet another Blue Ribbon Commission is another “kicking the can down the road” tactic used by politicians to avoid making a decision. Decisive leadership is needed to bring all relevant parties together in an honest and transparent process that is legally binding to avoid the situation that occurred for the Yucca Mountain project.

A key aspect to success is an informed and educated public on the issue of spent fuel storage and disposal. Misinformation campaigns need to be called out by responsible authorities and the media since they affect the political consensus process. One only needs to review posts on the internet and newspaper articles and television coverage of nuclear issues to see examples of misinformation.

The most secure means of ensuring sustainability in decisions is by contracts which should be used throughout the process to avoid political wind shifts.

From: Kevin Kamps

Sent: Friday, March 4, 2022 12:21 PM

To: Consent Based Siting

Subject: [EXTERNAL] "RFI: Consent-Based Siting and Federal Interim Storage" -- Public comments from 137 organizations, and additional individuals, submitted under protest -- Re: Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To ...

Attachments: 3 4 22 coalition comments.pdf

March 4, 2022

Re: Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities, U.S. Department of Energy, Notice, 86 FR 68244, pages 68244-68246, Document Number 2021-25724, December 1, 2021

Public Comments Submitted by a Coalition of Environmental, EJ (Environmental Justice), and Public Interest Organizations

Comments submitted comments electronically to consentbasedsiting@hq.doe.gov. Subject line: "RFI: Consent-Based Siting and Federal Interim Storage"

To: U.S. Department of Energy, Office of Nuclear Energy

Dear U.S. Department of Energy, Office of Nuclear Energy,

Attached, please find comments (47 pages) by 137 Native American, environmental justice, and environmental non-governmental organizations, and additional individuals, regarding the U.S. Department of Energy's ("DOE's") *Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities*, 86 Fed. Reg. 68,244 (Dec. 1, 2021) ("2021 Request for Information").

We submit these comments under protest, because DOE has failed to respond in any way to our letter of February 15, 2022, signed by more than 50 non-governmental organizations (NGOs) and individuals, requesting you to withdraw the *2021 Request for Information*, and do the work of analyzing and responding to previous public comments on the issue of consent-based siting before publishing any further request for information. Letter from Diane Curran to Office of Spent Fuel and Waste Disposition re: *Request to Withdraw, Revise and Re-Publish Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities*, 86 Fed. Reg. 68,244 (Dec. 1, 2021).

We continue to demand, as set forth in detail in our February 15 letter, that before soliciting comments, you must establish a process for developing consent-based siting of nuclear facilities that is transparent, fair, and accountable to the affected public.

That said, on behalf of our 137 organizations, and our members we represent, as well as additional signatories, please find for your consideration our comments (47 pages), attached below.

Please acknowledge receipt of this cover note, as well as of the attached coalition comments.

Sincerely,

Kevin Kamps, Beyond Nuclear, on behalf of 137 organizations, and additional individuals

--

Kevin Kamps
Radioactive Waste Specialist
Beyond Nuclear

[REDACTED]

[REDACTED]

[REDACTED]

www.beyondnuclear.org

Beyond Nuclear aims to educate and activate the public about the connections between nuclear power and nuclear weapons and the need to abolish both to safeguard our future. Beyond Nuclear advocates for an energy future that is sustainable, benign and democratic.

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

March 4, 2022

Re: Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities, U.S. Department of Energy, Notice, 86 FR 68244, pages 68244-68246, Document Number 2021-25724, December 1, 2021

Public Comments Submitted by a Coalition of Environmental, EJ (Environmental Justice), and Public Interest Organizations

Comments submitted comments electronically to consentbasedsiting@hq.doe.gov. Subject line: “RFI: Consent-Based Siting and Federal Interim Storage”

To: U.S. Department of Energy, Office of Nuclear Energy

Dear U.S. Department of Energy, Office of Nuclear Energy,

Below, please find comments by 137 Native American, environmental justice, and environmental non-governmental organizations, and additional individuals, regarding the U.S. Department of Energy’s (“DOE’s”) *Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities*, 86 Fed. Reg. 68,244 (Dec. 1, 2021) (“*2021 Request for Information*”).

We submit these comments under protest, because DOE has failed to respond in any way to our letter of February 15, 2022, signed by more than 50 non-governmental organizations (NGOs) and individuals, requesting you to withdraw the *2021 Request for Information*, and do the work of analyzing and responding to previous public comments on the issue of consent-based siting before publishing any further request for information. Letter from Diane Curran to Office of Spent Fuel and Waste Disposition re: *Request to Withdraw, Revise and Re-Publish Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities*, 86 Fed. Reg. 68,244 (Dec. 1, 2021).

We continue to demand, as set forth in detail in our February 15 letter, that before soliciting comments, you must establish a process for developing consent-based siting of nuclear facilities that is transparent, fair, and accountable to the affected public.

That said, on behalf of our 137 organizations, and our members we represent, as well as additional signatories, please find for your consideration our comments, below.

First we respond directly to the questions you posed for comment/response in your Federal Register Notice (see pages 1 to 19 below). After that, we will provide additional comments (see pages 19 to 31 below). Some of them further respond to the questions you posed in your Federal Register Notice. But some of them comment on aspects of federal Consolidated Interim Storage Facilities (CISFs) you did not ask about in your list of Federal Register Notice questions. At the end of the letter, beginning on page 31, organizations endorsing these coalition comments are listed, with individual signature lines.

DIRECT RESPONSES TO/COMMENTS ON THE QUESTIONS DOE POSED IN ITS FEDERAL REGISTER NOTICE

In its Federal Register Notice (< <https://www.federalregister.gov/documents/2021/12/01/2021-25724/notice-of-request-for-information-rfi-on-using-a-consent-based-siting-process-to-identify-federal> >), DOE has asked a series of questions, re: which it has requested public comment on. Reproduced below are the DOE questions, in bold and underlined. *The italicized text comprises our comments in response.*

[DOE] Questions for Input [from Federal Register Notice, underlined and in bold below]

Given Congressional appropriations to move forward with interim storage activities, we are seeking input on using a consent-based process to site federal interim storage facilities. We will use responses to this RFI [Request for Information], along with comments received in 2017 on the Draft Consent-Based Siting Process ([www.energy.gov/ sites/ prod/ files/ 2017/ 01/ f34/ Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)) [sic, the link is broken in DOE's Federal Register Notice], to help develop a consent-based siting process for use in siting federal interim storage facilities, the overall strategy for development and operation of an integrated waste management system, and possibly a funding opportunity.

Respondents to this RFI do not need to address every question, but DOE welcomes input in all of the following areas.

Area 1: Consent-Based Siting Process

- 1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?**

Social equity and environmental justice should be a top priority for “consent-based siting” of all federal nuclear facilities, including so-called “consolidated interim storage facilities” (CISFs), if they ever become legal. It is Orwellian to float the offer of jobs, infrastructure development, and potential funding to BIPOC (Black, Indigenous, People of Color) communities, low-income communities, and such communities already disproportionately impacted by hazardous facilities, and portray it as a social equity and environmental justice advancement. BIPOC, low-income, and already heavily polluted communities should not be further disproportionately impacted with CISFs for one of the most hazardous substances ever generated by human society, highly radioactive irradiated nuclear fuel.

As Keith Lewis, environmental director for the Serpent River (Ojibwe) First Nation near Elliot Lake, Ontario, Canada, is quoted as saying in This Is My Homeland: Stories of the Effects of Nuclear Industries by People of the Serpent River First Nation and the North Shore of Lake Huron (edited by Keith Lewis, Lorraine Rekmans, and Anabel Dwyer; published by Serpent River First Nation, 1998 & 2003) — “There is nothing moral about bribing a starving man with money.” He was speaking about the devastation done to his First Nation, and its homeland, by the offer of hazardous uranium mining and milling jobs beginning in 1948, and ending altogether by 1996. The jobs are long since gone, but the devastation goes on. His quote is entirely relevant to highly radioactive wastes as well, such as when DOE targets BIPOC and/or low-income communities, many times already disproportionately polluted by hazardous industries, with the added hazardous pollution burden of federal CISFs.

DOE itself has a most shameful tradition of targeting Native American reservations/Sovereign Indigenous Nations for CISFs. See the 2005 NIRS/Public Citizen factsheet, “Radioactive Racism.” < posted online at: <http://archives.nirs.us/radwaste/scullvalley/historynativecommunitiesnuclearwaste06142005.pdf> > This shameful history cannot be repeated now or in the future.

There is also a pattern of federal CISF schemes turning into private CISF schemes, such as the Private Fuel Storage, LLC CISF, targeted at the Skull Valley Goshutes Indian Reservation in Utah. < see: <http://archives.nirs.us/radwaste/scullvalley/skullvalley.htm> > Currently, so-called “private” CISFs targeting New Mexico and Texas could effectively become federalized, if DOE pays all costs (using federal taxpayer money, and/or perhaps even nuclear ratepayer funds from the Nuclear Waste Fund, which are supposed to only be used for permanent disposal, not for interim storage), including a hefty profit margin to the private owners. However, such an arrangement is illegal. The Nuclear Waste Policy Act of 1982, as Amended, prohibits DOE from taking title to/ownership of commercial irradiated nuclear fuel at a private CISF, unless and until a permanent repository is licensed and operating.

Significantly, New Mexico is a majority minority (Latinx, Indigenous) state, with widespread poverty issues. It is also disproportionately impacted by nuclear and fossil fuel industrial pollution, and other hazardous industries. Such disproportionate impacts are especially acute at the Holtec, NM and Interim Storage Partners, TX CISF sites (the latter just 0.37 miles from the NM state line, and upstream). These disproportionate impacts are compounded by the two

supposedly “private” CISFs, proposed to “temporarily store” a grand total of up to 213,600 metric tons of commercial irradiated nuclear fuel and highly radioactive waste (more than twice the amount that currently exists in the U.S.), being located just 40-some miles apart. These proposed “private” CISFs are an attempt to turn the TX/NM borderlands into a high-level radioactive waste dump, a national sacrifice area. We say “supposedly private,” because both license applications leave open the possibility that DOE itself would be the sole customer, paying all costs — effectively representing a title transfer for the irradiated nuclear fuel, from private companies, to DOE. Such a title transfer is illegal, per the Nuclear Waste Policy Act of 1982, as Amended, unless and until a permanent geologic repository is licensed, open, and operating.

See Beyond Nuclear’s series of eight fact sheets, expressing opposition to the TX and NM CISF schemes, including to DOE’s illegal potential key involvement in them: < <http://archive.beyondnuclear.org/centralized-storage/2021/9/11/new-beyond-nuclear-fact-sheets-opposing-consolidated-interim.html> >.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Tribal, state, and local governments should have free, and fully-informed, consent-based siting rights, including an absolute veto against a federal CISF. That is, tribal, state, and local governments should have fully-informed, absolute, binding, and final rights to non-consent. Any

DOE, or private, scheme to construct and operate a CISF must cease and desist immediately, once tribal, state, and/or local government “hosts” express their non-consent. In addition, consent-based siting rights should extend directly to the citizens/residents of the tribal reservation, state, and/or locality. Free, and fully-informed, consent-based siting rights should extend to citizens/residents, who should also have absolute and final veto rights to block CISFs.

For example, the Saugeen Ojibwe Nation in Ontario, by an 86% to 14% tribal referendum vote in January 2020, blocked the construction and operation of a permanent repository for all of Ontario’s so-called “low-,” and highly radioactive intermediate-, level radioactive wastes.

Free, and fully-informed, consent rights to consent, or not consent, should be extended as widely as possible, including to the public, not just to elected or appointed government leaders. And such free, fully-informed consent, with absolute and final state veto power, should also extend to permanent repositories, not just CISFs, as the Nevada U.S. congressional delegation has asserted for the past several years, with its re-introduction each congressional session of the Nuclear Waste Informed Consent Act.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

As mentioned above, the idea that jobs, infrastructure development, and/or potential funding, associated with the construction and operation of a CISF, is not compatible with environmental

justice and social equity, when the CISF is targeted at BIPOC and/or low-income communities, already heavily polluted by nuclear and/or other hazardous industries. Thus, DOE should cease and desist from targeting BIPOC, low-income, and/or already heavily polluted communities for CISFs.

Instead, the benefits and opportunities that DOE should be extending to local, state, and/or tribal governments, in line with environmental justice and social equity, should be renewable energy and energy efficiency, as well as clean up and remediation, in nature. DOE should shift resources from the dead end that is promotion of the nuclear power industry and its dirty, dangerous, and expensive agenda, and instead promote renewables, such as wind and solar power, as well as energy efficiency. And DOE should shift resources from the promotion of nuclear power, to the clean up and remediation of past radiological contamination messes. As Winona LaDuke of Honor the Earth has put it, “The first rule in kindergarten is, you have to clean up your last mess, before you get to make a new one.”

In 2012, at a hearing of the U.S. Senate Energy and Natural Resources Committee, focused on legislation to implement the Blue Ribbon Commission on America’s Nuclear Future’s (BRC) recently released Final Report (published in Jan. 2012), U.S. Senator Risch (R-ID) made a cynical joke. He said that “consent-based siting,” recommended by the BRC, really meant financial incentives. Sen. Risch’s cynical remark was very telling and revealing. And objectionable. DOE’s “consent-based siting” cannot be a thinly veiled PR (public relations) ploy to “get to yes” on CISFs. Legalized bribery is unacceptable, and in this case an EJ violation. As Keith Lewis of Serpent River First Nation was quoted above, “There is nothing moral about bribing a starving man with money.” It would fly in the face of the Biden administration’s own rhetoric about prioritization of EJ principles, rhetoric that Energy Secretary Granholm and Principal Deputy Assistant Secretary Huff have themselves invoked.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

First and foremost, we should STOP MAKING MORE NUCLEAR WASTE.

In addition, as DOE Office of Nuclear Energy’s own Blue Ribbon Commission on America’s Nuclear Future (BRC) recommended in its Final Report in January 2012, DOE should no longer be in charge of irradiated nuclear fuel and highly radioactive waste management. A major reason for the public’s irreparable loss of trust in DOE is its incompetence, or worse, at managing irradiated nuclear fuel and highly radioactive waste over decades past. Hence DOE must be replaced. This recommendation was as much of an overarching priority as the need for “consent-based siting” itself. This of course represents a major barrier and impediment to DOE’s attempt to site federal CISFs, even supposedly using a “consent-based” process. DOE should not be advancing this Request for Information and public comment proceeding. Any such initiatives should be left to the replacement agency, organization, or body, advocated by BRC a

decade ago. Why is DOE driving this train, when its very own BRC strongly recommended DOE be replaced in the driver's seat?

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

As an important part of fully-informed consent-based siting of CISFs, DOE should clearly admit to potential host communities that so-called "interim storage" facilities could easily become de facto permanent surface storage, de facto permanent surface disposal, or parking lot dumps. Given that highly radioactive wastes, such as irradiated nuclear fuel, remain hazardous for at least a million years (as acknowledged by the U.S. Environmental Protection Agency, in its court-ordered rewrite of its Yucca Mountain regulations, published in 2008), containers and facilities will degrade and fail, unless regularly replaced. The U.S. Nuclear Regulatory Commission assumed, in its 2014 Generic Environmental Impact Statement on Continued Storage of Spent Nuclear Fuel (previously called the Nuclear Waste Confidence Rule), that CISFs, once constructed and operating, would be replaced in their entirety, once every hundred years. So communities targeted by DOE for federal CISFs must be fully informed that the high risks of highly radioactive wastes will persist for at least a million years, and that unless the CISFs are replaced once per century in their entirety, those radioactive hazards would be unleashed into the local environment, to blow with the wind, flow with the water, and cause harm, downwind, downstream, up the food chain, and down countless generations into the future.

One million years of "interim" storage at a CISF would require 10,000 complete replacements of the CISF, per NRC's logic. The problem is, NRC has not indicated where the funding would come from to do that. Nor has DOE. Nor has the nuclear power industry. And such a flippant assumption, that CISFs in their entirety would be replaced, once per century, flies in the face of the inevitability of loss of institutional control, over a much shorter timeframe. Even NRC Chairman Allison Macfarlane warned about the danger of the inevitable loss of institutional control, when NRC approved its Continued Storage GEIS and Rule in 2014.

In a previous DOE RFI regarding CISFs, none other than Holtec International itself advised DOE that "interim" has to be assumed to last at least 300 years. Per the NRC immediately above, that would mean at least three complete replacements of the entire CISF, to stave off age-related degradation container failure, and failure of other CISF systems, structures, and components important to safety. Where would the funding come from to do so? Neither NRC nor DOE have answered that question. What would the consequences be if such replacements did not take place, such as due to lack of funding, or loss of institutional control? NRC Chairman Macfarlane warned, when NRC approved its Continued Storage of Spent Nuclear Fuel GEIS (formerly called Nuclear Waste Confidence Rule, but more truthfully dubbed a Nuke Waste Con Game), that institutional control will, by definition, someday be lost. Once that happens, what will be the consequences at CISFs? It is entirely possible that institutional control will be lost at

CISFs during Holtec's relatively short 300 years, let alone EPA's million-year hazardous persistence acknowledgement.

These questions and concerns, and many others regarding the high risks of CISFs, must be communicated clearly to potential "host" communities, so they know what they are getting into. If this does not happen, fully-informed consent would be violated.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

As provided for in the Nuclear Waste Policy Act of 1982, as Amended, regarding permanent repositories, the DOE should also provide funding to states, Native American tribal governments, and Affected Units of Local Government, being targeted for federal CISFs. Such funding is essential for attaining fully-informed consent, including for the hiring of independent experts, and the performance of independent technical, sociological, and other vital research.

In addition, such funding support from DOE should be extended to Non-Governmental Organizations (NGOs), which are almost always expected to take part in U.S. federal licensing and/or public comment proceedings, such as this one, with no federal funding support whatsoever. This practice is itself a violation of environmental justice and social equity, as environmental and environmental justice organizations, which often operate on very low budgets, or with no funding at all, have been expected to self-fund, or else simply volunteer with no funding support, throughout highly complex and very lengthy federal proceedings. Such past abuse cannot be repeated in the present or future, not without violating fully-informed and free consent-based siting principles.

Other countries, such as Canada and Sweden, do provide national government funding to NGO watchdogs, to take part in national highly radioactive waste dump licensing proceedings. The U.S. should also do so, but never has. This U.S. government neglect is itself an EJ violation, when EJ NGOs are thus neglected.

7. What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process.pdf)) [sic, please note that this is a broken link, despite its inclusion in the Federal Register Notice] should the Department consider in implementing a consent-based siting process?

Opponents to federal and/or private CISFs have likely submitted more than 100,000 public comments opposed to CISFs over past years and decades. This has included public comments submitted to: NRC in the Private Fuel Storage, LLC ([targeted at the Skull Valley Goshutes Indian Reservation in Utah](#) < see: <http://archives.nirs.us/radwaste/scullvalley/skullvalley.htm> >) CISF environmental review public comment proceedings, in the late 1990s/early 2000s; the DOE Office of Nuclear Energy's own Blue Ribbon Commission on America's Nuclear Future (2010-2012); the U.S. Senate Energy and Natural Resources Committee chairman Ron Wyden

(Democrat-Oregon) a decade ago, when the ENR Committee requested public comment during the development of legislation to implement the BRC's recommendations; DOE's own previous "Consent-Based Siting" public comment proceeding (2015-2017); and the current round of CISF targeting (namely, at Interim Storage Partners in Texas, and Holtec in New Mexico) NRC environmental review public comment proceedings (2017-2021); and other related public comment proceedings. DOE should compile, publish, review, consider, and respond in writing, to all these previous 100,000+ public comments, opposed to CISFs, whether privately owned, or federally implemented.

As those 100,000+ comments have made clear not for years, but for decades, large numbers of Americans rightfully regard CISFs as a very dangerous, non-sensical non-starter. Highly radioactive wastes and irradiated nuclear fuel should only be shipped once, from the nuclear power plant sites and DOE facilities where they are currently stored, to a technically suitable, socially acceptable permanent geologic repository. (See Beyond Nuclear's "Stringent Criteria for a Highly Radioactive Waste Geologic Repository." < <http://archive.beyondnuclear.org/repositories/2020/5/26/stringent-criteria-for-a-highly-radioactive-waste-geologic-r.html> >)

CISFs, by definition, guarantee that serious transport risks will be multiplied, for no good reason whatsoever, as irradiated nuclear fuel and highly radioactive waste crosses the country from reactor sites and DOE facilities, to CISFs, only to have to be shipped again someday (or some decade, or some century) to a permanent repository. The permanent repository could be located right back in the same direction from which the irradiated nuclear fuel came in the first place, further revealing the absolute folly of CISFs.

If CISFs are merely intended to expedite the transfer of title and liability for commercial irradiated nuclear fuel, from industry onto DOE (that is, federal taxpayers), this is entirely unacceptable. As federal policy, law, and regulation have long established, and as courts have ruled, interim storage is the private owners' responsibility, while permanent disposal is the federal government's (that is, DOE's or its replacement entity, per the BRC recommendation — that is, ultimately, federal taxpayers') responsibility. (The nuclear ratepayer funded Nuclear Waste Fund does currently contain some \$40 billion, for use on permanent geologic disposal. But repositories will cost far more than this. Federal taxpayers will be looked to to make up the difference.) This latter policy, of the federal government bearing responsibility for permanent disposal, already represents an unprecedented, unique in all of industry, very large-scale subsidy to a private industry. The nuclear power industry should not be allowed to foist interim storage costs, risks, and liability onto DOE (that is, taxpayers) as well. This would be a radical departure from past federal policy, law, regulation, and court ruling precedent.

Besides, DOE, as well as NRC, the nuclear power industry, and its proponents, stubbornly refuse to acknowledge much or any risk associated with on-site storage of irradiated nuclear fuel and highly radioactive waste, whether stored in wet indoor pools, or outdoor dry cask storage, whether at operating nuclear power plants, permanently closed atomic reactors, DOE complex sites, or elsewhere. If such on-site storage is so safe and secure, as DOE, NRC, and the nuclear

power industry assert, then why ship the wastes to CISFs? Why take the unnecessary transport risks? Why expose away-from-reactor “green field” sites to the very high risks of CISFs, if current on-site storage is so safe and secure? DOE, NRC, and the nuclear power industry are speaking out both sides of their mouth, in their advocacy for unneeded, unhelpful CISFs. CISFs actually multiply the risks, unnecessarily, unhelpfully, and should be rejected.

By the way, on-site storage is not safe and secure. Far from it. This is why more than 200 groups, representing all 50 states, have called for hardened on-site storage, for the past two decades. See more about HOSS, elsewhere in our comments.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

As mentioned above, BIPOC and/or low-income communities, as well as those already disproportionately polluted, should not even be targeted for CISFs in the first place. It would be an environmental justice violation, on its face. But DOE could and should support BIPOC and/or low-income communities, especially those already shouldering disproportionately high hazardous industry burdens, in consent-based siting of safe, clean, renewable energy and energy efficiency economic development. This would comport with the Biden administration’s stated EJ principles. So too would DOE prioritizing long overdue radiological clean up and remediation, in places contaminated with hazardous ionizing radioactive pollution, as due to nuclear power and nuclear weapons industry abuses of the past, including those perpetrated by DOE (and its predecessor, the U.S. Atomic Energy Commission, AEC) itself.

Another barrier is language. Importantly, Latinx communities often have a large percentage of residents for whom Spanish is their primary or only language. Such is the case in the region surrounding the privately owned CISFs currently targeting the Permian Basin in New Mexico and Texas. Along one stretch of railway (El Paso to Monahans in West Texas) that would carry high-level radioactive wastes to one or both of these CISFs if they are constructed and operated, the Latinx population represents 92% of the overall population, and 49% of the population does not speak English well. (For more detailed information, see: < <http://static1.1.sqspcdn.com/static/f/356082/28466350/1631389405890/CISF+Dangers+and+Holtec+and+ISP+sites-3.pdf?token=TdODAT3hqzGDDH887ttAaoVjjJQ%3D> >)

Thus, for DOE to meaningfully communicate with such populations, all written and verbal communications must not only appear in English, but also Spanish.

Similarly, numerous Indigenous Nations have been and still are targeted for CISFs, whether privately-owned or federal. Again, all communications must be translated into all local Indigenous languages. This is especially important given the leadership role of elders in

traditional Indigenous Nations; many elders speak their Native language, with English (and/or Spanish) a distant second, if at all.

Along similar lines, DOE must always be conscious of digital divides. Given the disproportionately high poverty rates, rural locales, and other socio-economic challenges faced by many BIPOC and low-income communities, including those already beset by disproportionate hazardous pollution burdens, many citizens and residents that would be most impacted by CISFs, do not have ready internet, nor cell phone, access. Despite this, especially in this era of pandemic, most to all federal government proceedings (including this one, DOE's RFI re: CIS "Consent-Based Siting") is mostly to entirely internet-based and/or telephone-based.

New Mexico — currently targeted by a private CISF (Holtec), with very likely major DOE involvement (albeit illegal), and previously targeted by DOE for a federal CISF (at the Mescalero Apache Reservation, which was then later targeted by a private CISF, Private Fuel Storage, LLC) — is a case in point. The majority minority (Latinx, Indigenous) State of New Mexico faces many socio-economic challenges, in addition to its disproportionate nuclear, fossil fuel, and other hazardous industry pollution burdens. These socio-economic challenges were further exposed during and exacerbated by the Covid-19 pandemic. Among these is the current lack of access, by many New Mexicans, to the internet, and reliable telephonic connections. During the Covid-19 pandemic in New Mexico, there have been numerous photos in newspapers throughout the state, showing children sitting in cars doing homework in the parking lots of fast food restaurants, their only option to access wifi for remote schooling.

Thus, if DOE proposes to undertake consent-based siting interactions in such places, the agency must be prepared to rectify such digital divides. If not, any claim of "consent-based siting" rings hollow and empty, a merely meaningless check-the-box PR exercise.

Last but not least, the hearing and visually impaired, or persons with other physical challenges, must have full access to all communications, just like everyone else in society. Not only does the Americans with Disabilities Act require this by law of federal agencies like DOE, but it is the right thing to do. For example, numerous persons with hearing impairments spoke out at an NRC DEIS public comment meeting re: CISF applications in the recent past, objecting to the illegal, just plain wrong high hurdles they faced in simply taking part in the proceeding.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

In addition to our answer to the question immediately above, as we also mentioned further above, DOE must provide adequate funding for community involvement, especially in BIPOC and/or low-income communities, particularly those already heavily burdened by hazardous industry and pollution. Such funding is needed for these communities to educate themselves, as well as to hire experts, communicate with their neighbors, and otherwise meaningfully take part in a very high stakes (life and death stakes, forevermore) proceeding initiated by a federal

executive agency with a budget in the tens of billions of dollars per year (provided by taxpaying Americans, by the way, including hardworking ones in these very same targeted low-income communities), initiated — truth be told — on behalf of the nuclear power industry, itself a trillion-dollar, extraordinarily heavily publicly subsidized special interest in this country. Tis would include funding for the hiring of translators, and community organizers, to communicate with their neighbors. In New Mexico and Texas, in addition to Spanish language speakers, there are also numerous Indigenous languages spoken, including Navajo Diné, as well as various Pueblo and Apache languages.

Such funding support should be extended by DOE to NGOs, including environmental and environmental justice, social equity, and public interest NGOs, to enable them to also meaningfully participate in the proceedings. After all, DOE's counterpart agencies, as in Canada and Scandinavia, do this. But in the U.S., low income, to no budget, grassroots environmental, EJ, social justice, and public interest organizations are expected to pay all the freight for their own involvement in such proceedings, or to simply take part in an entirely unfunded, completely volunteer way. This is not right nor just, and certainly violates any fair concept of "consent-based siting," at least in regards to the "host" community's civic sector/civil society, a vital element of the American experience, from the very beginning of our great experiment with democracy.

For Indigenous Nations and communities to be treated this way is just the latest chapter in a physical and cultural genocide that began in 1492, when Columbus invaded the Americas, but the latest Atomic Age addendum to earlier "Bury My Heart at Wounded Knee" and "Century of Dishonor" chronicles.

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

Renewable energy and energy efficiency are the future, if we are to have a future, in our climate-constrained world. Nuclear power is way too slow, and way too expensive, to help address the climate crisis in any meaningful way. In fact, money wasted on glacially slow and astronomically expensive nuclear power, is an opportunity cost, robbing resources from the real solutions, including renewables and energy efficiency.

So, to maximize opportunities for mutual learning, and to collaborate with communities interested in economic development, job creation, infrastructure improvement, and potential funding from DOE, renewables and efficiency should be the focus, not nuclear power, including its hideous "back end," radioactive waste storage and "disposal" (a misnomer on a small, living planet — how can we "dispose" of this forever hazard, that can all too easily escape into the biosphere over time, as its containment fails?).

That said, even though nuclear power cannot help solve the climate crisis, it does have "insurmountable risks" all its own, as conveyed by the title and content of the groundbreaking

2006 book by Dr. Brice Smith of the Institute for Energy and Environmental Research, *Insurmountable Risks: The Dangers of Using Nuclear Power to Combat Global Climate Change* (< see: <https://ieer.org/resource/books/insurmountable-risks-dangers-nuclear/> >). One of these is the dilemma of highly radioactive waste management. Of course we should stop making it. But for what already exists, environmental justice principles preclude the targeting of BIPOC and/or low-income communities for CISFs, especially those already disproportionately burdened by hazardous pollution. Yet this is precisely what DOE is attempting to do, while calling it “consent-based siting” as well as an “environmental justice” initiative. Orwell is rolling so fast in his grave, he could be connected to a turbo-generator and connected to the electric grid!

Another lesson DOE could learn from Indigenous wisdom was shared above. Winona LaDuke of Honor the Earth has pointed out that the first rule in kindergarten is, you have to clean up your last mess, before you get to make another one. Examples of these messes that need to be cleaned up include uranium mining and milling, as well as nuclear bomb making and testing, as in New Mexico. She also has said that the best minds in the nuclear industry have been hard at work for more than a half-century, trying to find a solution to the radioactive waste problem. And they’ve finally found one: haul it down a dirt road, and dump it on an Indian reservation.

DOE must stop targeting BIPOC and/or low income communities, already disproportionately impacted by pollution and hazardous industry, with CISFs for highly radioactive wastes. Instead, DOE should prioritize, along with all other relevant federal, state, and local government agencies, the clean up and remediation of radioactively contaminated sites, from past abuses, including those by DOE itself, and its predecessor agency, AEC.

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

As with the Nevada congressional delegation’s Nuclear Waste Informed Consent Act bill, introduced into both houses at the beginning of each new session of congress, any state targeted for a permanent repository should of course have absolute and final veto rights against the scheme — that is, the power of binding non-consent.

No state should have highly radioactive waste shoved down its throat, against its will. That would require the change in a line of the Pledge of Allegiance: “I pledge allegiance, to the flag of the United States of America; and to the Republic for which it stands; one nation, under God, indivisible” — except when it comes to radioactive waste, then it’s every state for itself!

As the DOE's own BRC itself pointed out, such attempts to "Screw Nevada" at Yucca Mountain, or to screw any other states in a similar way, will almost certainly end in failure, with no repository whatsoever at the end of the bitter fight.

But of course, state veto rights should also extend to CISFs. Such rights should also be extended to Native American tribal, and local, governments, targeted with highly hazardous facilities such as permanent repositories and/or CISFs.

So, to engage with state, local, and/or tribal governments, DOE should guarantee such governments the absolute and final right to veto, or to express their non-consent, against such facilities, from the start.

But as mentioned above, DOE should not be initiating such site searches, even if "consent-based." After all, the DOE Office of Nuclear Energy's very own Blue Ribbon Commission on America's Nuclear Future recommended, in its Final Report in Jan. 2012, that DOE be replaced in the realm of highly radioactive waste management. Reasons included a complete and irreparable breach of the public's trust by DOE, in terms of its incompetence and worse, vis-a-vis highly radioactive waste management, storage, and "disposal," over the course of many decades.

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

DOE should disclose to communities, governments, and/or other stakeholders the truth about the potentially catastrophic consequences of "hosting" forever hazardous high-level radioactive wastes and irradiated nuclear fuel, even for so-called "interim storage." DOE should make clear that "interim" storage would very likely become de facto permanent surface disposal, if a CISF is opened in the absence of a licensed, constructed, and operating permanent geologic repository, which is the exact situation in which we find ourselves.

DOE should disclose the truth about the hazards to human health of exposure to even short-term low doses of ionizing radioactivity, let alone long-term low doses of ionizing radioactivity, even under "routine" or "incident-free" operations of a CISF.

But of course, large-scale exposure to high doses of ionizing radioactivity — as due to accidents, attacks, natural or climate chaos caused, extreme weather disasters, and/or simply age-related degradation and failure of containment at CISFs over long enough periods of time — would be even more catastrophic.

DOE should disclose the high risks of reprocessing, since CISFs and reprocessing facilities are often joined at the hip, revolving door style. The private CISF targeted at southeastern New Mexico by Holtec actually grew out of a DOE scheme, the Global Nuclear Energy Partnership (GNEP), which spawned the Eddy-Lea [Counties] Energy Alliance, a pro-nuclear booster group,

itself closely affiliated with the Waste Isolation Pilot Plant (which itself experienced an “impossible” leak of plutonium and other transuranic radioactive isotopes into the environment on Valentine’s Day 2014, exposing nearly two-dozen workers to ultra-hazardous alpha inhalation doses), itself also a DOE project. The Holtec CISF site is on top of the ELEA GNEP site — signage from GNEP still litters the landscape, fallen to the ground, riddled with bullet holes. And the Holtec CISF site is just 16 miles north of WIPP.

Reprocessing’s many risks include nuclear weapons proliferation, large-scale releases of hazardous ionizing radioactivity to air, soil, and surface water (and thus harm downwind, downstream, up the food chain, and down the generations), as well as astronomical expense, which the public will be forced to pay.

DOE should disclose the radioactive stigma impact on all other economic sectors, in communities and even states and even regions that become radioactive waste dumps. In the rural areas often targeted for CISFs, this would mean a radioactive stigma impact on nearby agricultural industries, for example. But it would also mean a radioactive stigma impact for urban areas along the transport route to the proposed CISF in the rural location.

DOE should disclose that most higher paying jobs associated with CISFs will go to specially trained individuals coming from afar, not locally, while most of the very small number of jobs that are created, and accessible by most local residents, will not be very high paying at all. DOE should also be honest that the larger number of jobs associated with constructing a CISF would quickly dwindle post-construction to a much smaller number of permanent jobs during operations.

Such negative impacts, and many others, associated with CISFs should be fully disclosed by DOE to potential “host” communities, affected units of local government, and states or Native American tribal governments, or else any notion of “consent-based siting” will be undermined, as the “consent” will not be fully informed.

And again, low-income and/or BIPOC communities should not be targeted, lest “consent” not be freely given, but rather an expression of economic desperation, or other form of exploitation by a powerful federal agency, namely DOE, and the nuclear power industry it serves.

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

BIPOC and/or low-income communities should never again be targeted for CISFs. DOE’s own environmental injustice in this regard in the past — targeting Native American reservations for CISFs, as well as targeting Western Shoshone land in Nevada for a permanent repository — is

infamous and shameful. It should not be repeated in the present nor future (see: <http://archives.nirs.us/radwaste/scullvalley/historynativecommunitiesnuclearwaste06142005.pdf>; also see, regarding a DOE CISF scheme that turned into a private CISF scheme, targeting the Skull Valley Goshutes Indian Reservation in Utah: <http://archives.nirs.us/radwaste/scullvalley/skullvalley.htm>).

For Women's History Month in March, 2009, President Barack Obama honored Grace Thorpe (10 December 1921 – 1 April 2008), a Sauk and Fox and Pokagon Potawatomi Indian anti-nuclear activist, for her successful work to protect her own, and other, Native American reservations targeted for highly radioactive irradiated nuclear fuel de facto permanent surface storage parking lot dumps.

Obama's proclamation began:

"With passion and courage, women have taught us that when we band together to advocate for our highest ideals, we can advance our common well-being and strengthen the fabric of our Nation. Each year during Women's History Month, we remember and celebrate women from all walks of life who have shaped this great Nation. This year, in accordance with the theme "Women Taking the Lead to Save our Planet," we pay particular tribute to the efforts of women in preserving and protecting the environment for present and future generations..."

It continued:

"...Women have also taken the lead throughout our history in preserving our natural environment."

Re: Grace Thorpe, President Obama proclaimed:

"Grace Thorpe, another leading environmental advocate, also connected environmental protection with human well-being by emphasizing the vulnerability of certain populations to environmental hazards. In 1992, she launched a successful campaign to organize Native Americans to oppose the storage of nuclear waste on their reservations, which she said contradicted Native American principles of stewardship of the earth. She also proposed that America invest in alternative energy sources, such as hydroelectricity, solar power, and wind power."

[See the proclamation posted online here: < <http://static1.1.sqspcdn.com/static/f/356082/27179664/1512629446250/Obama+proclamation+on+Grace+Thorpe.pdf?token=ipskIjCjj89OTT55s8pEAvZHNRM=>>]

Thorpe served as a board of directors members of NIRS (Nuclear Information and Resource Service). Her primary organizational affiliation was NECONA (National Environmental Coalition of Native Americans).

She once told then-NIRS nuclear waste specialist, Kevin Kamps, in summer 2002, that her motivation to fight nuclear power and radioactive waste came from her experiences while deployed in Nagasaki, Japan in the immediate aftermath of the atomic bombing there. Thorpe won a Bronze Star for her service in the Women's Army Auxiliary Corps (WAACs, pronounced "wax") in World War II.

After President Obama's remarkable proclamation honoring Grace Thorpe's successful life's work fending off CISFs (previously called by other names in the past, such as Monitored Retrievable Storage (MRS) sites, Independent Spent Fuel Storage Installations (ISFSIs), Away-from-Reactor (AFR) sites, etc.) targeted at Native American reservations, how can the Biden administration DOE now be targeting Native American reservations, and other BIPOC, and/or low-income communities, especially those already suffering a disproportionate burden of pollution and hazard, with yet another round of proposed CISF schemes, albeit now under the ruse of "consent-based siting"? It is an EJ violation in and of itself.

Even if the CISFs never open. Just the targeting itself wounds these communities. Skull Valley Goshutes in Utah is a good example of this. Skull Valley was first targeted for a federal CISF by the DOE's own Nuclear Waste Negotiator, beginning in the late 1980s. When that failed, Private Fuel Storage, LLC — a consortium of a dozen or more nuclear power utilities — picked up the reins. The bitter struggle split the tribal down the middle. Resistance to the CISF by tribal members like Margene Bullcreek, Sammy Blackbear, and others, cost them dearly. They were required to make tremendous personal and family sacrifices, in their successful resistance to the CISF, an effort that dominated their time, energy, and lives over the course of many long years. The intra-tribal wounds, between pro-CISF and anti-CISF Skull Valley Goshutes tribal members, lasted long after NRC's approval of the CISF there in 2005-2006, even though no waste was ever shipped or stored there, due to ongoing, large-scale resistance, not only by intra-tribal resistance, but resistance across Utah, and around the country, including from Indigenous environmental leaders like Indigenous Environmental Network, Honor the Earth, and many others, as well as the national EJ movement itself. (See: < <http://archives.nirs.us/radwaste/scullvalley/skullvalley.htm> >) The mere targeting of low-income and/or BIPOC communities for CISFs is itself an EJ violation.

Such repeated targeting of BIPOC and/or low-income communities, for ever more pollution and hazard, over and over again over decades, is terrorizing and wearying to the communities which must repeatedly muster the wherewithal to fend off such threats, while facing many other challenges, and while living their lives, caring for their families and communities, and striving to preserve their cultural life-ways. In this very real sense, DOE's current "consent-based siting" RFI promoting CISFs is a significant EJ violation, in and of itself.

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

As mentioned above, the private CISF scheme proposed by Holtec in southeastern New Mexico grew out of DOE's very own GNEP scheme, a pro-reprocessing and pro-"advanced" reactor RD&D (Research, Development, and Deployment) scheme, that thankfully died a sudden death with the end of the Bush/Cheney administration. But truth be told, Holtec would like to undertake reprocessing at its CISF someday, if it could get away with it — as leaders of ELEA have revealed, as in media interviews, over the years. Holtec might even float the trial balloon of deploying Small Modular Nuclear Reactors at the CISF site. After all, it has a SMNR design/fabrication/sales division. Holtec pulled the bait and switch of acquiring the permanently shutdown Oyster Creek nuclear power plant, supposedly for decommissioning and irradiated nuclear fuel management purposes. But after a short time, Holtec then proposed to build a SMNR at Oyster Creek. Holtec cannot be trusted not to do so at other supposed decommissioning sites (Indian Point, NY; Palisades/Big Rock Point, MI; Pilgrim, MA), as well as at its CISF in NM.

But truth be told, Interim Storage Partners in Andrews County, TX, just 0.37 miles upstream from the NM border, would also like to reprocess irradiated nuclear fuel at its CISF, someday, if it can get away with it. After all, Orano (formerly Areva, formerly Cogema), the French government owned nuclear giant, is a major "partner" in Interim Storage Partners. Orano/Areva/Cogema is also the lead reprocessing entity in the Western world, having contaminated the Atlantic Ocean all the way to the Canadian Arctic with radioactive wastewater pollution, as well as releasing large-scale hazardous radioactive gaseous pollution onto the winds blowing across Europe. Orano has long been lobbying NRC (as recently as March 2020) to revise its reprocessing regulations, to make reprocessing in the U.S. that much easier to undertake.

Although DOE is proposing a federal CISF in this RFP, the same dynamic still applies. DOE tends to try to congregate multiple nuclear facilities on the same "nuclear oasis" site, given the popular resistance to all things nuclear in most places nationwide. Wherever DOE can get an inch, it attempts to take a mile. WIPP in NM is another such example. WIPP was sold to the people of NM, against the will of many, with the false promise that if WIPP opened as a so-called "low" level radioactive waste dump (albeit for ultra-hazardous transuranic military wastes), then NM would never be asked to become the "host" for highly radioactive wastes.

In the 1980s, DOE made promises to the People of New Mexico that it would cleanup all the transuranic waste at its weapons sites around the nation, ship it to WIPP and close the facility in 25 years - or in 2024. During that time DOE was charged with building regionally equitable repositories for transuranic wastes, which it has not done. DOE had other secret plans, which the public was denied their rights to question DOE and its contractors during recent public hearings. Just this week DOE officials admitted they plan to keep WIPP open until the middle of

the century. DOE proposes to double the size of the WIPP underground disposal area, for which half of that area will be for waste generated by manufacturing plutonium pits (triggers for nuclear weapons) at Los Alamos National Laboratory (LANL) in New Mexico. And DOE wonders how to build trust? Be transparent and tell the truth!

In fact, WIPP's existence is what has led its own proponents and boosters to strive to add more and more nuclear industry in the immediate area, what rabidly pro-nuclear U.S. Senator Pete Domenici (Republican-NM) called his "nuclear corridor," even extending into west TX.

After WIPP, URENCO set up shop in Eunice, NM, with NRC's blessing, even though URENCO was blocked in Louisiana over EJ violations, and was run out of other states, like TN, where it attempted to set up shop. URENCO set up shop in southeastern NM despite widespread resistance in NM, and nationally, compliments of NRC's ready rubber-stamp for all things nuclear.

Then Waste Control Specialists, LLC opened a national "low" level radioactive waste dump, just several miles east of Eunice, NM, just across the NM/TX state line in Andrews County.

International Isotopes, a depleted uranium hexafluoride deconversion facility, has been proposed near Hobbs, NM.

All of this is in addition to past nuclear abuses in southeastern NM, such as the Gnome-Coach Experimental (Nuclear Explosive Device) Test Site. There was also "Project Gasbuggy," a so-called "Project Plowshare" to investigate radioactive fracking near Farmington, NM in 1967. (See: <https://st.llnl.gov/news/look-back/project-gasbuggy-plowshare-program>.)

Not to mention numerous additional nuclear abuses across NM before (and after) WIPP came in, including at Los Alamos National Lab, the Trinity atomic bomb test site, Sandia National Lab and Kirtland Air Force Base, the uranium mining region of northwestern NM and the adjacent Four Corners area, in Pueblo and Navajo/Diné country, abuses at the White Mesa Uranium Mill in Ute Mountain Ute country in Colorado/Four Corners, etc. The radioactive racism perpetrated by the nuclear industry and DOE (and its predecessors, including not just AEC but even the Manhattan Project) against the people of NM is infamous and overwhelming, as well as still ongoing.

All this to say that adding environmental injustice upon environmental injustice does not make for environmental justice. That is why DOE's attempted assertion that the jobs, infrastructure development, and potential funding associated with "hosting" a CISE, would contribute to social equity and EJ, is Orwellian, and reprehensible.

Proposed legislation on Capitol Hill over the past several years, such as the Nuclear Waste Administration Act and other bills, purportedly intended to enact into law recommendations made by the DOE's own BRC, has suggested that preference should be given to sites that could

“host” a so-called pilot CISF, that could then “host” a full-scale CISF, that could then “host” a permanent repository. Of course, this means that any community that makes the mistake of agreeing to “host” a pilot CISF, will then be put under extreme pressure to also agree to “host” a full-scale CISF, and then will be put under even more pressure to agree to “host” a permanent repository. Whether or not such a site was even suitable or socially acceptable for a pilot CISF in the first place, let alone a full-scale CISF to follow, let alone a permanent geologic repository, seems to get lost quickly in the DOE and/or nuclear power industry lobbying campaign and snake oil salesmanship.

In a very real sense, this is an echo of NM’s prior experience with Los Alamos, Trinity, Sandia, WIPP, etc. over the course of eight decades, and counting.

And, as mentioned above, such pressure could extend beyond “hosting” radioactive waste dumps, to such other high hazard nuclear facilities as reprocessing centers, SMNRs, etc.

This amounts to Faustian fission. Once the nuclear beast (a phrase coined by the NM-based Nuclear Issues Study Group in 2017 for its conference at UNM, “Dismantling the Nuclear Beast”) gets its claws into a “nuclear oasis,” it will never let go. It will continue to press to add more and more hazardous nuclear industry facilities, into often times BIPOC and/or low-income “host” communities, which never consented to the initial foot-in-the-door/camel’s nose under the tent nuclear “pilot” facilities in the first place.

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

As mentioned immediately above, the nuclear beast, once its claws are in, will press for more and more. A federal CISF could well become a permanent geologic repository, whether or not the site is suitable, or socially acceptable, for either a CISF or a repository.

Alternatively, a federal CISF, just as with a private CISF, would likely become a de facto permanent surface storage site, or more accurately, a de facto permanent surface disposal site, a parking lot dump.

Another version of this involves the company Deep Isolation, Inc., pushing untested deep borehole disposal for irradiated nuclear fuel and highly radioactive wastes. DOE pushed deep borehole disposal. But its so-called test drills got nipped in the bud, run out of multiple states on a rail, before they could begin, including eastern NM. Deep Isolation, Inc. is staffed by many a former DOE official, yet another example of the revolving door between federal and private, between DOE and industry. Truth be told, like a radioactive snake oil salesman, Deep Isolation, Inc. would like to sell deep borehole disposal anywhere it can get away with it, be that at CISFs, at reactor sites, or elsewhere. So yet again, once a nuclear beast is let inside the house, it won’t leave, till it wrecks the place.

Another important point here is the spirit, and in fact the letter, of the law embodied in the Nuclear Waste Policy Act of 1982, as Amended. States with relatively small populations, and thus relatively less political and economic power, made sure to include in the law a wise precaution, prohibiting DOE from taking title to commercial irradiated nuclear fuel, unless and until a permanent geologic repository was licensed, constructed, and operating.

Otherwise, the political will to ever go forward with a repository would be lost, and the CISF would become de facto permanent surface disposal, a parking lot dump.

Despite this clear prohibition in federal law, NRC has proceeded to process the Holtec and ISP private CISF license applications, which clearly indicate a major or even overriding role for DOE involvement, including paying most to all costs, including a hefty profit margin to the private company CISF owners — that is, effectively a title transfer for commercial irradiated nuclear fuel from private industry owners, to DOE (that is, taxpayers). These supposedly “private” CISF schemes, with their overriding dependence on DOE (taxpayers) to pay all the freight, significantly blurs the lines of distinction between “private” and “federal” CISFs, in violation of the Nuclear Waste Policy Act of 1982, as Amended. (See Beyond Nuclear’s series of fact sheets for more information on this: <http://archive.beyondnuclear.org/centralized-storage/2021/9/11/new-beyond-nuclear-fact-sheets-opposing-consolidated-interim.html>)

A broad coalition of environmental groups, oil/natural gas/ranching/agricultural interests, and even the States of NM and TX themselves, have filed federal appeals against both CISFs, ISP (which NRC licensed in Sept. 2021), and Holtec (which NRC will likely license later this year). Bipartisan U.S. congressional delegations in the Permian Basin have also spoken out strongly against the CISF schemes. A groundswell of resistance nationwide is to be expected, once countless communities in most states learn the frightening fact that transport routes for high-

level radioactive waste (by rail, road, and/or waterway) pass directly through or dangerously near them.

In addition, DOE’s (using federal taxpayer money) paying most to all the freight for these supposedly “private” CISFs amounts to a radical departure from many decades of established U.S. law, regulation, and policy, as affirmed by federal court precedent — that storage of commercial irradiated nuclear fuel is the private industry’s responsibility (and liability), while permanent disposal is the federal government’s responsibility (and liability). In other words, title/ownership and liability cannot transfer, from private industry to DOE (American taxpayers) unless and until a permanent geologic repository has opened. CISFs, whether private or federal, or some combination of the two, proceeding in the absence of an operating repository, thus violates the spirit and letter of the Nuclear Waste Policy Act of 1982, as Amended, to the peril of CISF “host” communities, states, Native American reservations, etc.

Yet another example of the nuclear beast taking a mile when given an inch involves the current scheme to expand WIPP. As stated above, in the 1980s, DOE made promises to the People of

New Mexico that it would cleanup all the transuranic waste at its weapons sites around the nation, ship it to WIPP and close the facility in 25 years - or in 2024. During that time DOE was charged with building regionally equitable repositories for transuranic wastes, which it has not done. DOE had other secret plans, which the public was denied their rights to question DOE and its contractors during recent public hearings. Just this week DOE officials admitted they plan to keep WIPP open until the middle of the century. DOE proposes to double the size of the WIPP underground disposal area, for which half of that area will be for waste generated by manufacturing plutonium pits (triggers for nuclear weapons) at Los Alamos National Laboratory (LANL) in New Mexico. And DOE wonders how to build trust - be transparent and tell the truth!

4. What other issues should the Department consider in developing a waste management system?

First and foremost, WE SHOULD STOP MAKING MORE NUCLEAR WASTE.

And, as per above, didn't the BRC in Jan. 2012 recommend DOE be replaced as the agency in charge of irradiated nuclear fuel and highly radioactive waste management?! Therefore this entire proceeding is bogus and should be terminated! The Dec. 2015-Jan. 2017 DOE "consent-based siting" public comment proceeding further breached the public's trust. Large numbers of public comments, opposed to CISFs, were largely to entirely ignored by DOE in that proceeding. DOE even scrupulously avoided the very places in the U.S. targeted for "private" CISFs, albeit with deep DOE involvement, in TX and NM. Texans and New Mexicans opposed to the CISFs had to travel to AZ to take part in DOE's closest "consent-based siting" public comment meeting! DOE remaining the agency in charge is a blatant contradiction of its own BRC's recommendations!

A BRC meeting was held in Albuquerque, NM with former U.S. Senator Domenici (a BRC commissioner) and other BRC commissioners and DOE staff. However, it was a short meeting, and was shut down abruptly and hastily during the public comment period.

ADDITIONAL COMMENTS — SOME FURTHER RESPONDING TO DOE’S EXPLICIT QUESTIONS POSED IN ITS FEDERAL REGISTER NOTICE, OTHERS ADDRESSING ISSUES DOE DID NOT EVEN ASK ABOUT

Ten Comments, in Concise Form:

(1.) The most serious and inevitable risk if the U.S. Department of Energy were to take ownership of commercial highly radioactive nuclear waste before a permanent geologic repository opens: federal Consolidated Interim Storage Facilities would likely become Consolidated Permanent Surface Storage, that is, de facto Above-Ground Permanent Disposal, or Parking Lot Dumps.

(2.) Indefinitely long, to permanent, surface storage at federal CISFs would require active features. Loss of institutional control anytime over the next million years would mean the potential for catastrophic releases of hazardous radioactivity into the environment, which would harm people and other living things downwind, downstream, up the food chain, and down the generations, potentially out to great distances, depending on wind- and water-driven flow over long periods of time.

(3.) Indefinitely long, to permanent, surface storage at federal CISFs would remain dangerously accessible, risking unintentional/accidental, but nonetheless catastrophic, releases of hazardous ionizing radioactivity, as due to container degradation/failure over time, extreme weather disasters due to climate chaos, etc. However, intentional releases, as due to an act of war, terrorist attack, or sabotage, are also possible. So too is theft/diversion of weapons-usable materials, risking proliferation of nuclear weaponry and/or radiological “dirty bombs.”

(4.) Indefinitely long, to permanent, surface storage at federal CISFs would achieve only very short-term effectiveness, at best, compared to the extremely long hazardous persistence of irradiated nuclear fuel and highly radioactive waste.

(5.) Indefinitely long, to permanent, surface storage at federal CISFs, would result in intergenerational inequity, a form of environmental injustice.

(6.) Any legal authority for DOE to take title to and liability for commercial irradiated nuclear fuel at a federal CISF, in the absence of a permanent geologic repository, was very limited as to the quantity that could be stored there (just 1,900 metric tons), was for emergency purposes only, and expired more than three decades ago.

(7.) Federal CISFs would multiply the highly radioactive waste transportation risks, while accomplishing no increase whatsoever in the safety, security, health, or environmental protection associated with its storage.

(8). Nuclear power should be phased out and abolished, so that no more highly radioactive waste will be generated. We need to stop making it in the first place. However for highly radioactive irradiated nuclear fuel (INF) that already exists, hardened on-site storage (HOSS), or hardened near-site storage, is the best interim measure, not CISFs. HOSS, or hardened near-site storage, is the preferred interim alternative, not CISFs.

(9.) The continued targeting of CISFs at BIPOC (Black, Indigenous, People of Color) and/or low-income communities, already disproportionately burdened by pollution and hazardous facilities, is a violation of environmental justice principles. DOE, which itself has an infamous history of targeting Native American reservations for CISFs (previously called by other names, such as Monitored Retrievable Storage (MRS) sites, Independent Spent Fuel Storage Installations (ISFSIs), Away From Reactor (AFR) sites, etc.), must cease and desist from such environmentally/radioactively racist practices.

(10.) Federal CISFs would be a dangerous dead-end detour on the road to a scientifically/technically, and socially acceptable, repository. Federal CISFs would also constitute a radical reversal of long established U.S. policy, law, regulation, and court precedent, which has held the private owners of commercial irradiated nuclear fuel responsible for its interim storage, while the federal government (that is DOE, using federal taxpayer funds) is responsible for permanent disposal.

The Same Ten Comments as Immediately Above, with Further Explication:

(1.) The most serious and inevitable risk if the U.S. Department of Energy were to take ownership of commercial highly radioactive nuclear waste before a permanent geologic repository opens: federal Consolidated Interim Storage Facilities would likely become Consolidated Permanent Surface Storage, that is, de facto Above-Ground Permanent Disposal, or Parking Lot Dumps

To ensure that highly radioactive commercial nuclear waste eventually gets to a suitable, socially acceptable, permanent deep geologic repository, the U.S. federal government must have a comprehensive strategy that keeps the U.S. on the road to a repository and precludes premature and false “quick-fixes.” If the federal government undertakes consolidated irradiated nuclear fuel interim storage before it knows the location and characteristics of a proposed repository, it may

not have the resources or political will for long-term logistical and financial planning and execution. Given the high costs of packaging and transportation necessary for consolidated interim storage, money may run out before the significant additional expense of permanent repository construction and operation is undertaken. In those circumstances, highly radioactive commercial and federal nuclear waste will become stranded at surface storage facilities.

(2.) Indefinitely long, to permanent, surface storage at federal CISFs would require active features. Loss of institutional control anytime over the next million years would mean the potential for catastrophic releases of hazardous radioactivity into the environment, which would harm people and other living things downwind, downstream, up the food chain, and down the generations, potentially out to great distances, depending on wind- and water-driven flow over long periods of time.

Highly radioactive nuclear waste storage would be in casks placed at the Earth's surface or slightly below (i.e., within meters, or tens of meters). Storage systems would rely entirely on human-made engineered barriers that must be maintained and replaced at least every 100 years. This includes not only systems, structures, and components, including personnel, dedicated to safety, health, and environmental protection, but also to security. Therefore, surface storage requires investment and maintenance, governmental stability, and oversight for as long as the hazard persists (i.e., a million years).

By contrast, deep geologic disposal at a scientifically suitable and socially acceptable permanent repository, meeting all required stringent criteria, would rely on passive features: highly radioactive waste disposal casks would be placed in a mined repository 250-1,000 meters below the earth's surface. The disposal system would rely on a combination of human-made and natural geologic barriers designed to last a million years without need for human maintenance.

(3.) Indefinitely long, to permanent, surface storage at federal CISFs would remain dangerously accessible, risking unintentional/accidental, but nonetheless catastrophic, releases of hazardous ionizing radioactivity, as due to container degradation/failure over time, extreme weather disasters due to climate chaos, etc. However, intentional releases, as

due to an act of war, terrorist attack, or sabotage, are also possible. So too is theft/diversion of weapons-usable materials, risking proliferation of nuclear weaponry or radiological “dirty bombs.”

The location of CISFs at or near the Earth’s surface would permit inadvertent or intentional intrusion into containers after emplacement. Surface or near-surface federal CISF location(s) would make nuclear waste more accessible and therefore more vulnerable to theft, re-use, or accidental exposure and release. This would include not only its vulnerability to container degradation and failure, but also to such unpredictable, but likely over long enough time periods, risks as extreme weather disasters due to climate chaos, terrorist attacks, acts of warfare, or other potentially catastrophic scenarios (such as inadvertent human intrusion) resulting in large-scale release of hazardous ionizing radioactivity.

By contrast, deep geologic disposal at a permanent repository that meets all stringent scientific/technical and social acceptance requirements (see, for example: < <http://archive.beyondnuclear.org/repositories/2020/5/26/stringent-criteria-for-a-highly-radioactive-waste-geologic-r.html> >) would make highly radioactive wastes inaccessible by design, getting the wastes away from the volatile, violent surface of the planet. The wastes’ location in a deep mined geologic repository would make access to the hazardous materials extremely difficult. Therefore, this waste would have a low probability of theft, re-use, leakage, or accidental exposure and release.

(4.) Indefinitely long, to permanent, surface storage at federal CISFs would achieve only very short-term effectiveness, at best, compared to the hazardous persistence of irradiated nuclear fuel and highly radioactive waste.

NRC, for example, licenses storage casks for renewable 40-year terms and assumes that casks will be replaced “approximately once every 100 years.” In fact, in its 2014 Continued Storage of Spent Nuclear Fuel GEIS and Rule, NRC assumes that the entirety of CISFs would have to be replaced at least once per century, including not only the containers, but all systems, structures, and components associated with the facilities.

By contrast, deep geologic disposal at a permanent repository that meets stringent criteria would achieve long-term isolation. Federal regulatory standards require a repository to provide effective isolation of highly radioactive nuclear waste out to a million years, without requiring any human intervention.

(5.) Indefinitely long, to permanent, surface storage at federal CISFs, would result in intergenerational inequity, a form of environmental injustice.

Burdens would fall on future generations with the responsibility, costs, liabilities, and risks of maintaining protective barriers against exposure to radioactive toxins, even though they never enjoyed one watt-hour of electricity generated by the irradiation of reactor fuel. The surface location would provide relatively ineffective long-term protection against theft or diversion of Plutonium-239, risking nuclear weapons proliferation. Similarly, highly radioactive and long-lasting hazardous wastes could be stolen or diverted for use in radiological “dirty bombs,” even a very small quantity of which could unleash catastrophic consequences if detonated with conventional explosives or otherwise dispersed into the environment, as in an urban population center, agricultural breadbasket, or into a major drinking water supply.

By contrast, deep geologic disposal at a permanent repository meeting stringent requirements would live up to intergenerational equity principles. The repository would be designed to protect future generations who did not benefit from the nuclear reactors that generated the nuclear waste. Ideally leakage would be prevented until the long-lasting waste decays significantly. Costs would be paid primarily, or at least initially, by nuclear reactor licensees (more precisely, through fees charged to their ratepayers) through the Nuclear Waste Fund, collected during years of reactor operation.

A court order ended DOE’s collection of Nuclear Waste Fund fees in 2013. The Nuclear Waste Fund is currently at more than \$40 billion. But a repository could cost \$100 billion or more. More than one repository could well be needed, and in fact, per the Nuclear Waste Policy Act, is required, to maintain regional equity. That is, no one state would be forced to bear the entire high-level nuclear waste disposal burden for the entire country. The Nuclear Waste Fund fee collection will have to be reinstated. Otherwise, federal taxpayers will be looked to in the future to cover any shortfall in paying for the price tag for one or more repositories. Such a shortfall could be in the tens or even hundreds of billions of dollars, depending on the number of repositories required.

A scientifically suitable, socially acceptable deep geological repository could also provide maximum protection against theft or diversion of Plutonium-239 for production of nuclear weapons, and highly radioactive materials for use in radiological “dirty bombs.”

Per the five points above, for more detailed information on the advantages of socially acceptable, environmentally just, and scientifically and technically suitable permanent geologic repository disposal, versus permanent surface storage at consolidated “interim” storage facilities, see the Beyond Nuclear fact sheet *Maximizing Health and Environmental Protection: Permanent Geologic Disposal versus Surface Storage of Nuclear Waste*. (posted online here: < <http://static1.1.sqspcdn.com/static/f/356082/28466341/1631387150677/Disposal+v+Storage+Table+and+Serious+Risk-1.pdf?token=zXOmgSvOjG2CchLBCevUBq1s%2BWc%3D> >)

See also Beyond Nuclear’s “Stringent Criteria for Siting Permanent Geological Repository,” for the technical/scientific, as well as social/environmental justice and consent-based siting requirements that should be strictly required. (posted online here: < <http://archive.beyondnuclear.org/repositories/2020/5/26/stringent-criteria-for-a-highly-radioactive-waste-geologic-r.html> >)

Note that we have been warning about the risks that CISFs would likely become de facto permanent surface storage/disposal, or parking lot dumps, for many years. See, for example, our comments to DOE in Jan. 2017. (posted online here: < <http://archive.beyondnuclear.org/centralized-storage/2017/1/25/sample-public-comments-you-can-use-to-write-your-own-for-sub.html> >)

(6.) Any legal authority for DOE to take title to and liability for commercial irradiated nuclear fuel at a federal CISF, in the absence of a permanent geologic repository, was very limited as to the quantity that could be stored there, was for emergency purposes only, and expired more than three decades ago.

The only provision in the Nuclear Waste Policy Act of 1982, as Amended, that allows transfer of title to irradiated nuclear fuel, from commercial licensees to DOE, prior to the opening of a permanent geologic disposal repository, is the emergency “Interim Storage Program” found in Subtitle B of the NWP. But the Interim Storage Program expired in 1990. 42 U.S.C. (Part) 10156(a)(1). Thus the NWP contains no current provision that would allow DOE to assume

title and responsibility for commercial irradiated nuclear fuel to be stored at CISFs, whether federal or private. For more information, see the October 26, 2016 letter from an environmental coalition to the Commissioners of the U.S. Nuclear Regulatory Commission, re: SUBJECT: WCS License Application for Spent Fuel Storage Facility in Andrews County, TX, Docket No. 72-1050. (posted online here: < <http://static1.1.sqspcdn.com/static/f/356082/27307046/1477549767997/2016-10-27+Curran+et+al+letter+to+McCree+re+WCS+application.pdf?token=GF/6LIgDJTfibGlcQXVHIkYFD3Y=>> >)

That is, DOE has no legal authority to proceed with the construction and operation of federal CISFs, unless and until a permanent geologic disposal repository is licensed, constructed, and operating.

Likewise, federal ownership of commercial highly radioactive nuclear waste at private consolidated ‘interim’ storage sites is illegal under the Nuclear Waste Policy Act of 1982, as Amended. Yet the private, commercial nuclear power industry is asking federal regulators to help them evade federal law by issuing private CISF construction and operating licenses that contemplate illegal federal ownership of the commercial irradiated nuclear fuel at two proposed private consolidated interim storage facilities, Interim Storage Partners, LLC’s at Waste Control Specialists, LLC’s national “low” level radioactive waste dump immediately upon the New Mexico border in Andrews County, Texas, and at Holtec International’s at the Eddy-Lea [Counties] Energy Alliance’s site in southeastern New Mexico, midway between Hobbs and Carlsbad, just 40-some miles from ISP.

These illicit and illegal licensing actions are now on appeal in federal court. [*Beyond Nuclear, et al. v. NRC* (U.S. Court of Appeals for the D.C. Circuit, Nos. 20-1187, 20-1225, 21-1104, 21-1147 (consolidated)) (proposed ISP facility in western Texas); *Don’t Waste Michigan, et al. v. NRC* (U.S. Court of Appeals for the D.C. Circuit, Nos. 21-1048, 21-1055, 21-1056, 21-1179 (consolidated)) (proposed Holtec facility in southeastern New Mexico)]. Additional federal appeals have been filed by the States of Texas (in the 5th Circuit Court) and New Mexico (in federal district court there, as well as in the 10th Circuit Court). Fasken Land and Minerals, Inc. and the Permian Basin Land and Royalty Owners Association have joined the State of Texas in the 5th Circuit Court of Appeals.

(7.) Federal CISFs would multiply the highly radioactive waste transportation risks, while accomplishing no increase whatsoever in the safety, security, health, or environmental protection associated with its storage.

Since federal CISFs are supposedly “interim” (although they risk becoming de facto permanent), this means the highly radioactive wastes would have to be shipped all over again, this time to a permanent repository. That repository could very well turn out to be right back in the same direction from which the wastes originated in the first place.

As one example, consider shipments from Maine Yankee to the private CISFs currently targeted at the already heavily polluted, Latinx-majority New Mexico/Texas borderlands. The distance from the Maine Yankee nuclear power plant site to Holtec’s CISF in NM is around 2,500 miles, and to ISP’s in TX just some tens of miles less. Maine has been targeted by DOE for a permanent geologic repository, under Sebago Lake, during the “Eastern Site Search” launched by the Nuclear Waste Policy Act of 1982, as Amended. It could be targeted again in the future, as documented in the DOE’s 2008 “Report on the Need for a Second Repository.”

If the Maine repository went ahead, the irradiated nuclear fuel shipped to the Permian Basin would then have to return, another 2,500 miles, right back to where it came from in the first place. That would be 60 containers of highly radioactive waste, traveling 5,000 miles round-trip, through a dozen or more states, for no good reason whatsoever.

Similar non-sensical, high risk round-trips could occur all across the country. CISFs, whether private or federal, make no sense and are not needed. Given the transportation risks of Mobile Chernobyls (by road and/or rail), Floating Fukushimas (by barge), Dirty Bombs on Wheels (any and all shipment modes), and Mobile X-ray Machines That Can’t Be Turned Off (any and all modes, even during “routine” or “incident-free” shipments, although externally contaminated shipping containers would make gamma and neutron radiation doses to transport sector workers and innocent public passersby all the worse), there should only be one shipment, not multiple shipments. That is, containers of highly radioactive waste should travel from where they were generated, to a scientifically suitable, socially acceptable permanent geologic repository. That is, shipments should occur only once, to minimize transport risks. CISFs, whether federal or private, would unwisely multiply transport risks unnecessarily.

(8). Nuclear power should be phased out and abolished, so that no more highly radioactive waste will be generated. We need to stop making it in the first place. However for highly radioactive irradiated nuclear fuel (INF) that already exists, hardened on-site storage (HOSS), or hardened near-site storage, is the best interim measure, not CISFs. HOSS, or hardened near-site storage, is the preferred interim alternative, not CISFs.

Irradiated nuclear fuel should be transferred out of wet indoor storage pools in an expedited fashion, into hardened on-site dry cask storage, in order to address the catastrophic risks of potential pool fires. After the interim period of HOSS, only then should a single away-from-reactor transport shipment take place, to a socially acceptable, environmentally just, free and fully informed consent-based siting permanent geologic repository, to minimize the inevitable, high transport risks.

For more information, see:

Principles for Safeguarding High-Level Radioactive Waste at Reactors (Hardened On-Site Storage, HOSS), endorsed by more than 200 organizations, representing all 50 states (posted online here: < <http://archive.beyondnuclear.org/on-site-storage/2020/8/19/principles-for-safeguarding-nuclear-waste-at-reactors-harden.html> >);

Executive Summary, and Full report of “Robust Storage of Spent Nuclear Fuel: A Neglected Issue of Homeland Security”, by Dr. Gordon Thompson of Institute for Resource and Security Studies (January 2003), focusing on the vulnerability of irradiated nuclear fuel stored at the nation’s nuclear power stations to terrorism and other risks, and what can be done about it (posted online, here < <http://archives.nirs.us/reactorwatch/security/sechosses012003.pdf> >, and here < <http://archives.nirs.us/reactorwatch/security/sechossrpt012003.pdf> >, respectively);

Beyond Nuclear Letter to the Editor of the Los Angeles Times, re: hardened near-site storage at San Onofre nuclear power plant (posted online here: < <http://archive.beyondnuclear.org/home/2017/9/14/beyond-nuclear-letter-to-the-editor-in-the-la-times.html> >);

Beyond Nuclear’s *Stringent Criteria for a Highly Radioactive Waste Geologic Repository* (posted online here: < archive.beyondnuclear.org/repositories/2020/5/26/stringent-criteria-for-a-highly-radioactive-waste-geologic-r.html >);

Beyond Nuclear's *Licensing Now Underway for Two Unlawful Consolidated 'Interim' Storage Nuclear Waste Facilities: New Mexico and Texas/What Measures Are Needed for Reasonably Safe Interim Storage at Reactor Sites Pending Repository Siting and Licensing?* (posted online here: < <http://static1.1.sqspcdn.com/static/f/356082/28466342/1631387409593/ISP+and+Holtec+Unlawful+Applications+and+HOSS.pdf?token=tW%2BNcnrlyTffb0mvDl38vpHZpOA%3D> >).

(9.) The continued targeting of CISFs at BIPOC (Black, Indigenous, People of Color) and/or low-income communities, already disproportionately burdened by pollution and hazardous facilities, is a violation of environmental justice principles. DOE, which itself has an infamous history of targeting Native American reservations for CISFs (**previously called by other names, such as Monitored Retrievable Storage (MRS) sites, Independent Spent Fuel Storage Installations (ISFSIs), Away From Reactor (AFR) sites, etc.), must cease and desist from such environmentally/radioactively racist practices.** (See: < <http://archives.nirs.us/radwaste/scullvalley/historynativecommunitiesnuclearwaste06142005.pdf> >)

This is especially true, in light of President Obama's proclamation, in March 2009, honoring Sauk and Fox/Pokagon Potawatomi environmental justice and anti-nuclear activist Grace Thorpe for her work against CISFs targeting Native American reservations, including her own in Oklahoma. (see: < <http://archive.beyondnuclear.org/radioactive-waste-whatsnew/2018/2/14/president-obama-honored-grace-thorpe-re-her-resistance-to-nu.html> >)

This includes the dynamic that has occurred more than once in the past, in which federal CISF schemes have transformed into private CISF schemes. Both the DOE Nuclear Waste Negotiator initiated CISF schemes at the Mescalero Apache Reservation in southern New Mexico, as well as at the Skull Valley Goshutes Reservation in western Utah, were eventually turned into private CISF schemes by Private Fuel Storage, LLC, a consortium of nuclear utilities, with Holtec International as the container supplier. In fact, the PFS CISF at Skull Valley Goshutes was, and still is, licensed by NRC. However, it has never been constructed nor operated. (See: < <http://archives.nirs.us/radwaste/scullvalley/skullvalley.htm> >)

(10.) Federal CISFs would be a dangerous dead-end detour on the road to a scientifically and technically suitable, as well as socially acceptable, repository. Federal CISFs would also constitute a radical reversal of long established U.S. policy, law, regulation, and court precedent, which has held that the private owners of commercial irradiated nuclear fuel are responsible for its interim storage, while the federal government (that is DOE, using both nuclear ratepayer and federal taxpayer funds) is responsible for permanent disposal.

As the U.S. Nuclear Regulatory Commission has recognized, by providing, in the Nuclear Waste Policy Act of 1982, as Amended, Interim Storage Program, a narrow time period (the years 1982 to 1990) when DOE could take title to commercial irradiated nuclear fuel prior to the opening of a repository, “Congress intended to force the utilities to solve their own interim storage solutions after the federal program had ‘bought them time’ to do so.” Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), CLI-02-29, 56 NRC 390, 405-06 (2002). This resolve to force licensees to solve their own problems was based on “Congress’s belief that interim storage was the generators’ responsibility.” *Id.* at 404.

Congressional intent to place responsibility for interim commercial irradiated nuclear fuel storage squarely on licensees also is reflected in the other, extremely narrow, provisions of the Interim Storage Program. For instance, the Interim Storage Program limited the amount of commercial irradiated nuclear fuel that could be transferred to the DOE to only 1,900 metric tons. 42 U.S.C., Parts 10151(b)(2), 10155(a)(1). And before transferring that stopgap quantity of commercial irradiated nuclear fuel to the DOE, a reactor licensee was required to persuade the NRC that a lack of adequate irradiated nuclear fuel storage capacity at an operating nuclear reactor would jeopardize “the continued, orderly operation” of the reactor. 42 U.S.C., Part 10151(a)(3). These provisions show that Congress intended, prior to the opening of a repository, to sharply restrict the time and circumstances under which the DOE could take title to commercial irradiated nuclear fuel. (Taken from October 26, 2016 environmental coalition letter to NRC, re: WCS License Application, page 3 of 5. Posted online here: < <http://static1.1.sqspcdn.com/static/f/356082/27307046/1477549767997/2016-10-27+Curran+et+al+letter+to+McCree+re+WCS+application.pdf?token=GF/6LIGdJTfibGlcQXVHIkYFD3Y=>> >)

The federal government’s liability for permanent disposal in a geologic repository is a unique and unprecedented subsidy in all of industry, easily surpassing \$100 billion in value to the nuclear power industry, at the public’s expense. Several years ago, DOE estimated that the price tag for the proposed repository at the scientifically unsuitable, illegal, and socially unacceptable Yucca Mountain, Nevada site, on Western Shoshone land, would be close to \$100 billion, accounting for licensing, construction, and two centuries of operation. Simply adjusting for inflation alone would bring that grand total to over \$100 billion in today’s dollar figures.

Thus, repositories meeting stringent criteria — all of which Yucca Mountain violates — could easily cost \$100 billion, or more, as well. DOE — or more appropriately, the replacement agency DOE’s own Blue Ribbon Commission on America’s Nuclear Future recommended take over

highly radioactive waste management — would have access to more than \$40 billion in the Nuclear Waste Fund, collected as a fee from nuclear electricity ratepayers from the 1980s to 2013. The shortfall, more than \$60 billion, would come from federal taxpayers.

The shift of focus to the false quick-fix of federal CISFs would end momentum needed to locate a site meeting stringent criteria for a deep geologic repository for permanent disposal, and would waste critical time, money, and energy on the non-solution of CISFs. Given the cost and complexity of siting, licensing, constructing, and operating a permanent repository, such significant waste of resources on federal CISFs could well mean that money and momentum (societal and political will) would run out. This would result in the stranding of highly radioactive wastes at the CISFs, meaning they would become catastrophically risky *de facto* permanent surface storage, surface disposal, parking lot dumps (see point #1, above).

Federal CISFs would involve the expenditure of federal taxpayer money, for interim storage. U.S. policy, law, regulation, and court precedent has long held that interim storage costs are the responsibility of the private nuclear power industry title holders to the commercial irradiated nuclear fuel. Federal CISFs would shift such interim storage costs onto federal taxpayers.

This would be in addition to the \$2.2 million per day (\$800 million per year) federal taxpayers are already paying, in the form of damages, from the Judgment Fund at the U.S. Treasury, to commercial irradiated nuclear fuel title holders, due to DOE's partial breach of contract with them. DOE had contracted to begin permanent disposal at a repository beginning on January 31, 1998, but has missed that deadline by a quarter-century, and counting. DOE has also admitted a repository very likely will not open in this country until 2048 at the earliest, a full half-century after DOE's contractual commitment. This means another quarter-century to come of the U.S. Judgment Fund hemorrhaging taxpayer dollars — totaling tens of billions of dollars — to the nuclear power industry.

Please note that all materials suggested for downloading above are incorporated by reference as if rewritten here in their entirety, as part and parcel of these comments.

Thank you for considering our comments. If you have any questions, please contact Kevin Kamps, radioactive waste specialist at Beyond Nuclear, at: [REDACTED]
[REDACTED]

The following 137 organizations have signed onto these coalition comments (in alphabetical order by group name):

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Terry Lodge, Convenor, **Toledo Coalition for Safe Energy**, Toledo, OH

Marylina Kelley, Executive Director, **Tri-Valley CAREs (Communities Against a Radioactive Environment)**, Livermore, CA

Tina Cordova, **Tularosa Basin Downwinders Consortium**, Albuquerque, NM

Tina Volz-Bongar, **United For Clean Energy**, Peekskill, NY

Sarah Fields, Program Director, **Uranium Watch**, Monticello, UT

Debra Stoleroff, Steering Committee Chair, **Vermont Yankee Decommissioning Alliance (VYDA)**, Montpelier, VT

Kenneth Mayers, Major USMCR (Ret'd.), Veterans For Peace - National Board Member, **Veterans For Peace - Santa Fe - Chapter** Secretary, Santa Fe, NM

Hollis Higgins, Secretary, **Veterans for Peace (VFP) #035**, Spokane, WA

Mark Foreman, **Veterans for Peace, Chapter 102**, Milwaukee, WI

Rita Mitchell, Co-Founder, **Washtenaw 350**, Ann Arbor, MI

Buffalo Bruce, Staff Ecologist, **Western Nebraska Resource Council**, Chadron, NE

John Whitney, Chair, **Western New York Environmental Alliance**, Buffalo, New York

Jean Merrigan, Executive Director, **Women's Energy Matters**, Fairfax, CA

Mary Laan, **Women's International League for Peace and Freedom-Milwaukee**, Milwaukee, WI

Darien De Lu, President, **Women's International League for Peace and Freedom**, Des Moines, IA

Individuals endorsing the coalition comments:

JL Angell, Rescue, CA

James M. Cunningham, Shawnee Hills, OH

Phoebe Thomas Sorgen, Co-Chair, BFUU Social Justice Committee, Berkeley, CA

Pat Bulla, Austin, TX

Marla Painter, Chair of the Board, Mountain View Community Action- Albuquerque, NM

Sheila Baker, Petaluma, CA

Dr. Alice M. Evans, Montpelier, VT

Bridget Houston Hyde, Austin, TX

Mary Jane Williams, Winter Springs, FL

Gary Sachs, Brattleboro, VT

Barbara Antonoplos, Atlanta, GA

James Gibbs, NEIS, Chicago, IL

Roberta Siegel, Chicago, IL

Lucy Duff, Lanham, MD

From: Kevin Kamps

Sent: Friday, March 4, 2022 1:59 PM

To: Consent Based Siting

Subject: [EXTERNAL] 2 more groups have endorsed our coalition comments — Re: “RFI: Consent-Based Siting and Federal Interim Storage” -- Public comments from 137 organizations, and additional individuals, submitted under protest -- Re: Notice of Request for Info...

Dear DOE,

In addition to the below and attached, two additional organizations wish to endorse our coalition comments.

They are:

Maggie Gundersen, Founder and President, Fairewinds Energy Education, Charleston, SC

and

Dennis Nelson, Director, SERV (Support and Education for Radiation Victims), Kensington, MD

This brings the grand total of organizations signed onto these coalition comments up to 139.

Thank you for your consideration and for reflecting this update in your official records.

Sincerely,

Kevin Kamps, Beyond Nuclear

On Friday, March 4, 2022, Kevin Kamps <[REDACTED]> wrote:

March 4, 2022

Re: Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities, U.S. Department of Energy, Notice, 86 FR 68244, pages 68244-68246, Document Number 2021-25724, December 1, 2021

Public Comments Submitted by a Coalition of Environmental, EJ (Environmental Justice), and Public Interest Organizations

Comments submitted comments electronically to consentbasedsiting@hq.doe.gov. Subject line: “RFI: Consent-Based Siting and Federal Interim Storage”

To: U.S. Department of Energy, Office of Nuclear Energy

Dear U.S. Department of Energy, Office of Nuclear Energy,

Attached, please find comments (47 pages) by 137 Native American, environmental justice, and environmental non-governmental organizations, and additional individuals, regarding the U.S. Department of Energy’s (“DOE’s”) *Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities*, 86 Fed. Reg. 68,244 (Dec. 1, 2021) (“2021 Request for Information”).

We submit these comments under protest, because DOE has failed to respond in any way to our letter of February 15, 2022, signed by more than 50 non-governmental organizations (NGOs) and individuals, requesting you to withdraw the *2021 Request for Information*, and do the work of analyzing and responding to previous public comments on the issue of consent-based siting before publishing any further request for information. Letter from Diane Curran to Office of Spent Fuel and Waste Disposition re: *Request to Withdraw, Revise and Re-Publish Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities*, 86 Fed. Reg. 68,244 (Dec. 1, 2021).

We continue to demand, as set forth in detail in our February 15 letter, that before soliciting comments, you must establish a process for developing consent-based siting of nuclear facilities that is transparent, fair, and accountable to the affected public.

That said, on behalf of our 137 organizations, and our members we represent, as well as additional signatories, please find for your consideration our comments (47 pages), attached below.

Please acknowledge receipt of this cover note, as well as of the attached coalition comments.

Sincerely,

Kevin Kamps, Beyond Nuclear, on behalf of 137 organizations, and additional individuals

--

Kevin Kamps
Radioactive Waste Specialist
Beyond Nuclear

[REDACTED]

[REDACTED]

[REDACTED]

www.beyondnuclear.org

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--

Kevin Kamps
Radioactive Waste Specialist
Beyond Nuclear

[REDACTED]

[REDACTED]

[REDACTED]

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Use caution if this message contains attachments, links or requests for information.

From: Kevin Kamps

Sent: Monday, March 7, 2022 8:10 AM

To: Consent Based Siting

Subject: [EXTERNAL] Another group, and another individual, have endorsed our coalition comments — Re: “RFI: Consent-Based Siting and Federal Interim Storage” -- Public comments from 137 organizations, and additional individuals, submitted under protest -- Re: N...

Dear DOE,

Yet another individual, and another organization, have endorsed our coalition comments. They are:

Dr. Joyce Follingstad, Ph.D., Portland, OR and Bart Ziegler, PhD, Community and Environmental Medicine, President, **The Sarah Lawrence Foundation**, Del Mar, CA.

That brings the grand total of endorsers up to 140 organizations, and 14 individuals.

Thank you.

Sincerely,

Kevin Kamps, Beyond Nuclear

On Fri, Mar 4, 2022 at 4:58 PM Kevin Kamps [REDACTED] wrote:

Dear DOE,

In addition to the below and attached, two additional organizations wish to endorse our coalition comments.

They are:

Maggie Gundersen, Founder and President, Fairewinds Energy Education, Charleston, SC

and

Dennis Nelson, Director, SERV (Support and Education for Radiation Victims), Kensington, MD

This brings the grand total of organizations signed onto these coalition comments up to 139.

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Sincerely,

Kevin Kamps, Beyond Nuclear

On Friday, March 4, 2022, Kevin Kamps <[REDACTED]> wrote:

March 4, 2022

Re: Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities, U.S. Department of Energy, Notice, 86 FR 68244, pages 68244-68246, Document Number 2021-25724, December 1, 2021

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Sincerely,

Kevin Kamps, Beyond Nuclear, on behalf of 137 organizations, and additional individuals

--
Kevin Kamps
Radioactive Waste Specialist

Beyond Nuclear

[REDACTED]

[REDACTED]

[REDACTED]

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--

Kevin Kamps

Radioactive Waste Specialist

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[REDACTED]

[REDACTED]

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From: Kevin Kamps

Sent: Wednesday, March 16, 2022 8:50 AM

To: Consent Based Siting

Subject: [EXTERNAL] Errata re: Another group, and another individual, have endorsed our coalition comments — Re: “RFI: Consent-Based Siting and Federal Interim Storage” -- Public comments from 137 organizations, and additional individuals, submitted under prote...

Dear DOE,

An error in my 3/7/22 email to you, below, has been called to my attention. The organization is the **Samuel Lawrence Foundation**, not the Sarah Lawrence Foundation. Please correct my error, or add my errata here, in your final record for the public comment proceeding. Apologies for my error. Thank you.

Kevin Kamps, Beyond Nuclear

----- Forwarded message -----

From: **Kevin Kamps** <[REDACTED]>

Date: Mon, Mar 7, 2022 at 11:09 AM

Subject: Another group, and another individual, have endorsed our coalition comments — Re: “RFI: Consent-Based Siting and Federal Interim Storage” -- Public comments from 137 organizations, and additional individuals, submitted under protest -- Re: Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities, U.S. Department of Energy, Notice, 86 FR 68244, pages 68244-68246, Document Number 2021-25724, December 1, 2021

To: consentbasedsiting@hq.doe.gov <consentbasedsiting@hq.doe.gov>

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Thank you.

Sincerely,

Kevin Kamps, Beyond Nuclear

962

On Fri, Mar 4, 2022 at 4:58 PM Kevin Kamps [REDACTED] wrote:

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Kevin Kamps, Beyond Nuclear

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March 4, 2022

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Sincerely,

Kevin Kamps, Beyond Nuclear, on behalf of 137 organizations, and additional individuals

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Kevin Kamps
Radioactive Waste Specialist
Beyond Nuclear

[REDACTED]

[REDACTED]

[REDACTED]

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Kevin Kamps
Radioactive Waste Specialist
Beyond Nuclear

[REDACTED]

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Radioactive Waste Specialist
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From: Tracey katsouros
Sent: Friday, February 25, 2022 1:31 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Tracey katsouros



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From: Theresa Kaufmann
Sent: Friday, March 4, 2022 1:50 PM
To: Consent Based Siting
Subject: [EXTERNAL] Consolidated interim storage facilities of nuclear waste and spent fuel

To Whom It May Concern:

I am writing to comment on the issue of CISFs. Ideally radioactive waste should be stored where it is generated or moved only once from where it is generated to a permanent repository. Repeated transport of this dangerous material puts us all at risk so CISFs are an undesirable option from the start.

Tribal, state and local governments should have fully-informed and final consent-based siting rights including a veto against a federal CISF. Social equity and environmental justice should be a top priority so no groups are disproportionately affected as they have shamefully been in the past.

Replace DOE as the manager of irradiated nuclear fuel and nuclear waste. They have lost the confidence and trust of the public over many decades of mismanagement.

Thank you for your consideration.

Sincerely,

Theresa Kaufmann


Snake River Alliance

This message does not originate from a known Department of Energy email system.
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From: Garoutte, Justin, NMENV
Sent: Friday, March 4, 2022 1:39 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: 2022-03-04 - NMED OOTS OSI DOE Consent Based Permitting Comments (Final).pdf

Importance: High

Good afternoon,

Attached please find comments from the New Mexico Environment Department on this Request for Information related to Consent-Based Siting and Federal Interim Storage.

Sincerely,

Justin Garoutte

T. Justin Garoutte, MPH, CPH | Director of Strategic Initiatives

Pronouns: they/them or he/him ([Why is this important?](#))

New Mexico Environment Department

[@NMEnvDEP](#) | #IamNMED

Science | Innovation | Collaboration | Compliance

FOR COVID-19 INFORMATION & GUIDANCE: <https://cv.nmhealth.org/>



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This email, including all attachments, is for the sole use of the intended recipient(s) and may contain confidential or privileged information. If you are not the intended recipient, please let me know and delete the message. Thank you.

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March 4, 2022

Kim Petry
Acting Deputy Assistant Secretary
Spent Fuel and Waste Disposition
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

Re: Consent-Based Siting Process to Identify Federal Interim Storage Facilities Comments

Dear Acting Deputy Assistant Secretary Petry,

On December 1, 2021, the U.S. Department of Energy (DOE) requested information on how to site Federal facilities for the temporary, consolidated storage of spent nuclear fuel using a consent-based approach. On behalf of the New Mexico Environment Department (NMED), this letter constitutes our response to the DOE Request for Information (RFI) and was also submitted electronically to consentbasedsiting@hq.doe.gov.

While NMED offers the attached comments for consideration, the State of New Mexico is firmly opposed to the interim storage of spent nuclear fuel (SNF) and high-level waste (HLW) within or near our borders. DOE's efforts to seek input on a consent-based siting process for federal interim storage facilities stands in stark contrast to the lack of a consent-based siting process for commercial interim storage facilities. Seeking input on a consent-based siting process for federal interim storage facilities creates an inequity in the siting process for SNF and HLW merely based on ownership.

Ultimately, the siting of any interim storage facility in a state, irrespective of whether it manages federal or commercial SNF or HLW, must require concurrence from the current Governor prior to issuing its license or permit to operate.

Thank you for seeking insight from people, communities, and groups that have historically not been well-represented in these discussions, especially states.

Sincerely,

A handwritten signature in blue ink, reading "James C. Kenney".

James C. Kenney
Cabinet Secretary

General Comments

New Mexico's perspectives on consent-based siting for a federal interim storage facility are based on our actual experiences with the management, permitting, and licensing of radioactive wastes. First, New Mexico is the only state in the nation with an existing repository for low-level waste known as the Waste Isolation Pilot Plant (WIPP) located in Carlsbad, New Mexico. Second, New Mexico continues to raise objection to the non-consent-based siting and licensing of a commercial high-level waste (HLW) facility proposed by Holtec International in Carlsbad, New Mexico. Third, New Mexico continues to raise objection to the licensing of an HLW facility in Texas that is on the New Mexico border known as Waste Control and Storage Services.

Furthermore, Congress authorized \$20 million annually (indexed for inflation) in payments to the State of New Mexico for the maintenance of roadways used for transporting waste to the WIPP facility. However, despite continued requests to extend the lifecycle of the facility, payments to the state ceased in fiscal year 2012. Fundamentally, New Mexico's experience as the host state for the nation's only permanent repository for nuclear waste speaks to the need for the federal government to recognize the contributions of the state and to *guarantee* adequate resources not just for operations and maintenance of the facility but also for the state infrastructure needed to support such a facility.

Our experiences with the proposed interim storage of spent nuclear fuel (SNF) from commercial facilities is equally problematic. The Nuclear Regulatory Commission (NRC) has failed to address the State of New Mexico's technical concerns related to the proposed Holtec International facility as raised in our April 9, 2021, response letter to the draft Environmental Impact Statement (EIS).¹

Request for Information (RFI) Area 1: Consent-Based Siting Process

1. How should the U.S. Department of Energy (Department) build considerations of social equity and environmental justice into a consent-based siting process?
 - a. The Department should build considerations of social equity and environmental justice into a consent-based siting process by not treating federally owned/managed wastes different than commercially owned/managed wastes when it comes to siting an interim storage facility. Further, the Department should work with the NRC to establish a singular consent-based process for federal and commercial wastes. Anything less is inherently unequal and will not further environmental justice for impacted communities.
 - b. The Department should: (1) identify and collaborate with communities that have been historically underrepresented in siting decisions and may be affected by siting

¹ See <https://www.env.nm.gov/wp-content/uploads/2020/05/2021-04-09-NMED-Comments-on-Portions-of-Holtec-FEIS-Final.pdf>.

action(s) (e.g., low-income, Native American Nations, Latinx, colonias, land grant communities, as well as other communities of color); (2) identify and evaluate the cumulative history of adverse human health and environmental effects on vulnerable populations and quantifying specific impacts and health consequences to vulnerable populations that could occur from the various accidents and release scenarios related to the interim storage facility; and (3) work with the states and local jurisdictions to identify key community representative leaders (e.g., non-profit leaders) to assure adequate and balanced community representation during siting discussions.

- c. The Department should address that consent is not indefinite and can change over time. While this creates uncertainty for the projects that are delayed, such a process acknowledges that public health and environmental conditions are dynamic. Further, elected/appointed leaders change and reflect changing views of their community.
2. What role should Tribal, state, and local governments and officials play in determining consent for a community to host a federal interim storage facility?
- a. The use of the word “host” implies that a consent-based storage facility operating in a state would remain an invited “guest” in the state. However, a non-consent-based facility operating in a state is not a guest. Conceptually, states should have the right to consent or not to any such facility, yet the Department and the NRC do not have an equitable, parallel process for essentially the same radioactive wastes. The question itself is flawed and highlights the need for the whole of the federal government to develop a consistent, comprehensive approach rather than asking states to continue with a fractured process.
 - b. Tribal, state, and local governments are gatekeepers in any consent-based process. The Department must negotiate with each separately and seek their independent consent. More specifically, the Department should enter into a cooperating agency agreement with each Tribal, state, and local government for its environmental and safety reviews of any potential site in order to provide the most comprehensive information, including a full and complete characterization of any proposed project and its environmental and safety impacts and implications to a potential host community.

3. What benefits or opportunities could encourage local, state, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?
 - a. Funding for local, state, and Tribal staff time to independently analyze federal interim storage site plans may encourage engagement. However, local and Tribal governments are very engaged on this topic in New Mexico, and the majority strongly oppose interim and permanent storage.
4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?
 - a. Without a longer-term solution in place, a federal (or commercial) interim storage facility is a de-facto permanent storage facility. Addressing the permanent repository *prior* to addressing interim storage is necessary.
 - b. The non-consent-based siting of commercial interim storage facilities will continue to undermine the Department's efforts on this topic. The federal government should adopt a wholistic, comprehensive approach to consent-based siting.
 - c. Historically underrepresented communities may be hesitant to participate due to a history of siting facilities, mines, tailings piles, toxic waste dumps, etc. in poor and minority communities. The Department could hold listening sessions about past injustices.
 - d. Finally, the Department's commitment to successful siting of a federal interim storage facility using a consent-based process may best be demonstrated by relocating staff to the state to interface with stakeholders fulltime for a requisite period of time to meaningfully engage with stakeholders on their time and in their communities.
5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?
 - a. The Department should promote and provide information and frequent briefings to state, Tribal, and local community groups with a clear message of understanding among partners of what would lie ahead following an agreement to proceed with a project. This information must include what is known and what is unknown regarding risks associated with federal interim storage facilities. Spent reactor fuel and high-level nuclear waste are complex topics that are not easily understood by communities. All aspects of risks and protections for workers and the community

during operations and eventual shut-down must be identified, assessed, and explained in plain terms along with a condition to conduct short- and long-term community and environmental monitoring. Reasonable community expectations regarding the duration of the storage may be addressed by the following:

- i. Provide a clear timeline that starts with consultation/engagement commencement and continues with milestones throughout the consultation/engagement process. The timeline with milestones should continue through the regulatory/licensing process. For all stages of the timeline and milestones, the Department should publish on its website a graphic that interfaces with key documents, meetings, public testimony, decisions, etc. in real-time. A mirror website for those with limited English proficiency should also be developed and maintained in real-time.
- ii. Provide a clear and detailed explanation of amounts and types of nuclear material for interim storage and processing for permanent off-site disposal.
- iii. Provide an explanation of the types of radioactivity expected, doses occurring during operations, and its potential harmful effects on workers and the off-site community.
- iv. Provide accurate quantities of drums, bins, and spent fuel rods planned or expected for interim storage.
- v. Define safe storage capacity and identify minimum and maximum amounts of material to be stored.
- vi. Explain if liquid radioactive waste and mixed waste will be stored.
- vii. Explain if there will be any planned or unplanned radioactive air discharges or releases.
- viii. Explain potential dangers of a criticality event.
- ix. Explain the frequency of independent inspections at the facility.
- x. Provide notifications and reports on radiation doses expected or measured at and near the facility during operations.

- xi. Provide notifications and reports on changes to duration of storage and operations.
 - xii. Identify and report on the physical condition of arriving and stored nuclear material and the assurance of its safe stability in storage.
 - xiii. Ensure trusted safety and mitigation measures will be in place to assure worker and community safety during and after operations cease.
6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?
- a. The Department should partner with the following organizations and communities to develop a consent-based approach to siting: Native American Tribes and Nations; colonias; land grant communities; nonprofit organizations that protect public health and the environment, especially those run by and with a focus on Native Americans, Hispanics, and other communities historically underrepresented in siting and other environmental decisions; state governments (e.g., public health, environment, and transportation departments); county governments; town/village councils; economic development agencies and labor groups; emergency response systems, including fire, law enforcement, environmental response contractors, and medical response; and local area hospitals.
7. What other issues, including those raised in the 2017 Draft Consent-Based Siting Process, should the Department consider in implementing a consent-based siting process?
- a. Ultimately, the siting of any interim storage facility in a state, irrespective of whether it manages federal or commercial SNF or HLW, must require concurrence from the current Governor prior to issuing its license or permit to operate.
 - b. The Department should work with Congress to codify into law a “for cause” termination of any permitted or licensed interim storage facility that successfully completed the consent-based siting process if there is intentional or unintentional misrepresentation of fact or circumstance discovered after the process is completed.
 - c. The Department should work with Congress to codify into law a “for cause” revocation of consent threshold or process. Further, the Department should work with Congress to codify into law a threshold or process to withdraw consent after a license or permit is issued with an adjudication process, placing the burden on the licensee or permittee to continue to operate – not the “host” state.

- d. The Department should communicate clearly that given the history of SNF storage and disposal, temporary storage locations may turn into long-term or permanent storage locations without Congressional action. The Department should work with Congress to codify into law that an interim storage facility cannot constitute a permanent storage facility without the successful completion of a new consent-based process.
- e. Future potential drinking water sources and future potential drinking water transportation corridors need to be considered. As water resources become increasingly scarce, treatment of poor-quality water and transporting water to communities that no longer have an adequate supply may become more common. Placing a facility in an area where water resources are too saline or too deep to be currently used could reduce the option to use them in the future when new treatment technologies or increased demand might make these sources a viable option.
- f. Consent along transportation corridors must be included in the interim storage facility siting process.
- g. Facilities or structures for storing SNF should not be sited in proximity to existing critical infrastructure, including power generation, pipelines, petroleum storage tanks, etc.

RFI Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?
 - a. Limited English Proficiency. Language can be a significant barrier to meaningful participation. Materials and public notices should be translated into multiple written and spoken languages. Traditional newspaper advertisements should be supplemented with spoken announcements on radio, television, and social media platforms.
 - b. Trust of Government. Historically underrepresented communities may be hesitant to participate due to a history of siting facilities, mines, tailings piles, toxic waste dumps, etc. in poor and minority communities. The Department could hold listening sessions about past injustices. Compensation for and repair of past harms, including providing medical treatment, restoring damaged ecosystems, and/or providing additional services as requested by affected communities, could result in more participation, in addition to partially restoring justice.

- c. Information Accuracy. The Department should identify realistic challenges in advance (i.e., state, Tribal, and local laws, regulations, or restrictions) and open discussions early on with all stakeholders on project feasibility considering identified challenges. The Department should always assure that factual and science-based information regarding the project is released to the public. When the Department and partners interact with stakeholders in public settings, subject matter experts should fact check and quickly respond to misinformation conveyed.
2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?
- a. In general, local, state, and Tribal governments are not funded by the federal government to engage on SNF interim storage facilities. The Department should fund local, state, and Tribal governments to staff the consent-based siting process from beginning to end. A consent-based siting process may create an unfunded mandate on local, state, and Tribal governments. The Department should not presume that local, state, and Tribal governments have the funding for staff and contractors to adequately and meaningfully engage in this process.
 - b. Adequate staffing and funding resources would be needed for outreach by multiple methods, including: in-person communication with leaders as well as non-leaders of underrepresented communities (e.g., Native American, Latinx, African American); online webinars; project website; translation services for local languages; facilitation services for community meetings; and hiring members of underrepresented communities to explore concerns and ideas.
 - c. The Department should develop educational and fact-based media clips and hand-outs featuring proposed scenarios in addition to providing an overview of: radiation safety and dose; risks to workers and community; community economic opportunities during and following operations; potential short- and long-term effects to the local environment; and comparisons to similar and successful Department projects.
 - d. The Department should frequently post multi-lingual project briefs and notifications through the following venues: local papers; local TV; email lists; mailings; local radio; and posting boards at the project site, universities and community colleges, local library, state office buildings (e.g., break rooms), grocery and general stores, laundry mats, coffee shops, municipal building and community meeting places, chapter houses, community senior citizen facilities, post offices, and power/telephone poles.

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?
 - a. The Department could relocate staff to live in the area the proposed interim storage facility may be located throughout the consent-based siting process. Further, the Department could fund a body of select local, state, and Tribal governments to provide ongoing feedback to the Department.
 - b. The Department could maximize opportunities for mutual learning and collaboration with potentially interested communities by engaging deeply with members of underrepresented communities, as noted previously. Additionally, the Department should identify and frequently interact with state officials and key community leaders by establishing a meeting schedule to brief leaders on progress, hurdles, and shortfalls. The Department should set up a local office at the site, or in the nearby community, for administration activities and to hold public gatherings. The Department should designate an on-site or community-based point-of-contact and support staff to interface with the state regulators, community, and other stakeholders.
4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?
 - a. The Department could relocate staff to live in the area the proposed interim storage facility will be located throughout the consent-based siting process. Further, the Department could fund local, state, and Tribal governments to engage in the consent-based siting process.
 - b. The Department should utilize existing Tribal councils or the Tribal Radioactive Materials Transportation Committee to facilitate consent among Native American Nations and provide a path to incorporating Tribal knowledge into the interim storage siting process.
 - c. The Department needs to assure adequate and balanced local, state, and Tribal community representation during all discussions.
5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

- a. Communities, governments, and other stakeholders need information related to the total process, their role in that process, and how to engage generally and meaningfully at the decision points. Communities, governments, and other stakeholders need to understand the key decisions points in the process timeline.
- b. Communities, governments, and other stakeholders need information from sources both outside of and inside the Department about the history of SNF storage and the fact that no permanent solution has yet been found for the safe storage of SNF for the thousands of years required until it no longer poses a threat to the health of humans and other organisms.
- c. Communities, governments, and other stakeholders need information regarding project feasibility, an accurate and science-based project overview, information on economic effects (i.e., before, during, and cessation of operations), environmental risks, and human and health risks.
- d. Communities, governments, and other stakeholders need information pertaining to the development and operations of a federal interim storage site. Stakeholders may ask whether the federal interim storage facility would potentially turn their community into a sacrifice zone upon cessation of operations.

RFI Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?
 - a. The Department must comprehensively address federal laws, rules, and executive orders related to these topics and genuinely ensure they guide the process, especially related to cumulative impact and limited English proficiency. An independent audit of decisions and outcomes, including unconscious bias of Department management and staff, must be part of the process.
 - b. The Department should ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system by: (1) ensuring all Department staff undergo anti-racism training; (2) identifying and collaborating with communities that have been historically underrepresented in siting decisions and may be affected by siting action(s) (e.g., low-income, Native American Nations, Latinx, colonias, land grant communities, as well as other communities of color); (3) identifying and evaluating the cumulative history of adverse human health and environmental effects on vulnerable populations and quantifying specific impacts and health consequences to vulnerable populations that could occur from the various accidents and release scenarios related to the nation's

waste management system; and (4) working with the State of New Mexico to identify key community representative leaders (e.g., non-profit leaders, governmental leaders) to assure thorough and balanced community representation during national waste management system discussions.

- c. A project timeline for consent-based siting must include an iterative analysis of social equity and environmental justice in developing the nation's waste management system.
- 2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?
 - a. The possible drawbacks of co-location include: operational disruption from accidents, physical or cyber-attacks; increased chance of large-scale contamination due to a physical or cyber-attack with transportation, repackaging, or storage; increased large-scale contamination of land area affected and number of sources within a given area that could shut down multiple operations; greater impacts to larger numbers of people involved in the same area of work in a given location; long-term, cumulative negative environmental and human health effects; and geographic stigma that could threaten future economic conditions of the community and region.
- 3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?
 - a. The Department should first identify a permanent repository process and candidates before siting any interim storage facilities. Once that occurs, the Department should demonstrate a reasonable and believable schedule for the operation and closure of the consent-based interim facility to be synchronized with the opening of a permanent disposal facility. The partners and communities may not be open to the Department siting an interim storage facility without a guarantee of a permanent storage repository directly linked to the closing of the interim site.
- 4. What other issues should the Department consider in developing a waste management system?
 - a. The Department's efforts to seek input on a consent-based siting process for federal interim storage facilities stands in stark contrast to the lack of a consent-based siting process for commercial interim storage facilities. Seeking input on a consent-based

siting process for federal interim storage facilities creates an inequity in the siting process for SNF and HLW merely based on ownership.

- b. Ultimately, the siting of any interim storage facility in a state, irrespective of whether it manages federal or commercial SNF or HLW, must require concurrence from the current Governor prior to issuing its license or permit to operate.
- c. Interim storage discussions should include analysis of the complexity of transporting SNF across the nation multiple times. The current system requires transportation from the generator site to treatment facilities and then to interim storage facilities before transport to the final disposal facility location. The NRC stated in its Waste Confidence Decision (SECY-14-0072: Final Rule: Continued Storage of Spent Nuclear Fuel (RIN 3150-AJ20), July 21, 2014, <https://www.nrc.gov/docs/ML1417/ML14177A474.pdf>) that SNF can be stored safely beyond the operating life of a power reactor, at their current locations, until a national repository for SNF is established. States and regional groups have consistently supported moving the fuel only once – from current locations to a national permanent repository. Moving SNF multiple times increases the likelihood of accidents within the State of New Mexico and elsewhere. To promote public trust, the Department should research all infrastructure and routes of proposed transportation that would support the interim storage facility. The Department should address any infrastructure, social equity, and environmental justice considerations of the immediate community and affected distal communities (including neighboring states) that would be part of the network for transporting HLW and spent fuel rods to and from the site.
- d. The presence of non-radiological contaminants, including hazardous waste, that may potentially be discharged to soil, water, and air during operation of the site should be included in any waste management system design and operations and maintenance plans. Without thorough characterization of non-radiological contaminants present, neither the NRC nor the State of New Mexico can properly and effectively eliminate or mitigate potential discharges. Siting requirements should include analysis of all possible pathways for public and worker exposure to both radiological and non-radiological hazards related to the transportation and interim storage of waste.

- e. Design and implement plans for environmental multi-media (air, soil, water, biota, etc.) surveillance monitoring along transportation routes and the facility location, including the characterization of baseline conditions. The Department should also consider the long-term monitoring implications on local, state, and Tribal resources for storage sites and transportation routes.
- f. The Department must consider all local, state, Tribal, and federal protection standards and required regulatory actions.
- g. The Department should consider emergency response resources available within the context of local, state, and Tribal resources.
- h. The Department must include a safety analysis within an environmental review or National Environmental Policy Act (NEPA) analysis.

From: [REDACTED]

Sent: Thursday, February 3, 2022 4:13 PM

To: Consent Based Siting

Subject: [EXTERNAL] Our comments re: "consent-based siting" for so-called Consolidated Interim Storage Facilities:

TO: DOE

FROM: Dr. Mha Atma S Khalsa

Martha Oaklander
[REDACTED]

As concerned American citizens and taxpayers we appreciate your considering our comments.

- (1.) The most serious and inevitable risk if the U.S. Department of Energy were to take ownership of commercial highly radioactive nuclear waste before a permanent geologic repository opens: federal Consolidated Interim Storage Facilities would likely become Consolidated Permanent Surface Storage, that is, de facto Above-Ground Permanent Disposal, or Parking Lot Dumps.
- (2.) Indefinitely long, to permanent, surface storage at federal CISFs would require active features. Loss of institutional control anytime over the next million years would mean the potential for catastrophic releases of hazardous radioactivity into the environment, which would harm people and other living things downwind, downstream, up the food chain, and down the generations, potentially out to great distances, depending on wind and water driven flow over long periods of time.
- (3.) Indefinitely long, to permanent, surface storage at federal CISFs would remain dangerously accessible, risking unintentional/accidental, but nonetheless catastrophic, releases of hazardous ionizing radioactivity, as due to container degradation/failure over time, extreme weather disasters due to climate chaos, etc. However, intentional releases, as due to an act of war, terrorist attack, or sabotage, are also possible. So too is theft/diversion of weapons-usable materials, risking proliferation of nuclear weaponry or radiological dirty bombs.
- (4.) Indefinitely long, to permanent, surface storage at federal CISFs would achieve only very short-term effectiveness, at best, compared to the hazardous persistence of irradiated nuclear fuel and highly radioactive waste.
- (5.) Indefinitely long, to permanent, surface storage at federal CISFs, would result in intergenerational inequity, a form of environmental injustice.
- (6.) Any legal authority for DOE to take title to and liability for commercial irradiated nuclear fuel at a federal CISF, in the absence of a permanent geologic repository, was very limited as to the quantity that could be stored there, was for emergency purposes only, and expired more than three decades ago.
- (7.) Federal CISFs would multiply the highly radioactive waste transportation risks, while accomplishing no increase whatsoever in the safety, security, health, or environmental protection associated with its storage.

(8.) Nuclear power should be phased out and abolished, so that no more highly radioactive waste will be generated. We need to stop making it in the first place. However for highly radioactive irradiated nuclear fuel (INF) that already exists, hardened on-site storage (HOSS), or hardened near-site storage, is the best interim measure, not CISFs. HOSS, or hardened near-site storage, is the preferred interim alternative, not CISFs.

(9.) The continued targeting of CISFs at BIPOC (Black, Indigenous, People of Color) and/or low-income communities, already disproportionately burdened by pollution and hazardous facilities, is a violation of environmental justice principles. DOE, which itself has an infamous history of targeting Native American reservations for CISFs (previously called by other names, such as Monitored Retrievable Storage (MRS) sites, Independent Spent Fuel Storage Installations (ISFSIs), Away From Reactor (AFR) sites, etc.), must cease and desist from such environmentally/radioactively racist practices.

(10.) Federal CISFs would be a dangerous dead-end detour on the road to a scientifically/technically, and socially acceptable, repository. Federal CISFs would also constitute a radical reversal of long established U.S. policy, law, regulation, and court precedent, which has held the private owners of commercial irradiated nuclear fuel responsible for its interim storage, while the federal government (that is DOE, using both nuclear ratepayer and federal taxpayer funds) is responsible for permanent disposal.

Thank you again.

Mha Atma S Khalsa and Martha Oaklander

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From: Faith Kirk
Sent: Wednesday, March 2, 2022 5:17 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Faith Kirk



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From: Jakloper
Sent: Thursday, January 27, 2022 1:30 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

[REDACTED]

I read the consent based siting document and felt it was well thought out.

I would like to see communities that store these radioactive materials get some long term community benefit from their commitment to store these materials, not just the economic benefits of having the construction, infrastructure enhancement, and limited employment that will directly result from the facility. If a community is willing to support our country's energy needs we should consider aiding them in meeting some long term need that they don't have either the funding or expertise to achieve.

Julie Kloper

Sent from my iPad

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From: randall krause
Sent: Tuesday, December 14, 2021 1:41 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: RFI Consent-Based Siting.docx

Please see attached response from Randall Krause.

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Randall Krause

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Response to RFI: Consent-Based Siting and Federal Interim Storage

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process? **Answer:** The Department should build social equity and environmental justice into a consent-based siting process by locating the interim storage facility in a remote area. Consent will be difficult to achieve in a densely or even moderately populated area.
2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility? **Answer:** The approval of Tribal, State, and local government officials should determine consent for a community to host a federal interim storage facility. For a facility inside city limits, consent should be defined as approval by the governor of the state, the mayor of the affected city, and a majority of the city council. For a facility outside city limits, consent should be defined as approval of the governor of the state, the county commissioner of the district where the facility is to be located, and a majority of the other county commissioners.
3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites? **Answer:** An offer of a grant to explore the concept would encourage engagement with the Department.
4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed? **Answer:** The main barrier is convincing the public that it is safe. The public's fear can be overcome by sending community members on a tour of existing storage facilities and allowing them to speak with the people who work there.
5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities? **Answer:** The duration of storage is not likely to be a main concern for most communities. They want to know that it is safe and will provide good paying jobs.
6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting? **Answer:** The Department should work with the commissioners of Woods County, Oklahoma. I had the opportunity to present this idea to them and they are interested in hosting a facility to store spent nuclear fuel. There are less than 9,000 people in Woods County but we have Northwestern Oklahoma State University. And we have a town called Avarad that would be perfect for an interim storage facility. Avarad is a virtual ghost town but it has a rail park. There is plenty of vacant land near Avarad with a very low water table. Avarad should be a place the Department considers.

<https://www.alvareviewcourier.com/story/2021/12/08/local/woods-county-commissioners-hear-idea-to-bring-federal-jobs-to-county/75466.html>

7. What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process? **Answer:** The Department should focus on a personal bottom-up approach when implementing a consent-based siting process. A top-down authoritative approach will never work.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed? **Answer:** The main barrier to meaningful participation is a condescending, authoritative approach. The best approach is humble communication that reaches people on a personal level.
2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process? **Answer:** A grant that enables community members to travel to an existing storage facility would help ensure meaningful participation in the consent-based siting process.
3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities? **Answer:** A mock-up of a storage cask placed where community members can view it up-close might aid in mutual learning and collaboration with potentially interested communities.
4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities? **Answer:** First, ask communities if they would consider hosting an interim storage facility. It's possible that many would. But if no one is interested, put some advertisements on television with celebrities walking around a storage facility. People need to see that it is safe.
5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities? **Answer:** Communities need to know how a storage facility will affect their quality of life, whether it is safe, and how many jobs it will create and at what salary.

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system? **Answer:** The best way to ensure that considerations of social equity and environmental justice are addressed in developing the nation's waste management system is to place facilities in remote areas.
2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies? **Answer:**

The benefit of co-locating multiple facilities within the waste management system is that the spent nuclear fuel does not have to be moved twice.

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository? **Answer:** An interim storage facility should be developed immediately, regardless of the status of a permanent repository.
4. What other issues should the Department consider in developing a waste management system? The Department should keep facilities away from states and communities with secessionist leanings.

From: randall krause
Sent: Saturday, February 26, 2022 8:11 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: Supplemental Response to RFI.docx

Please see supplemental response from Randall Krause.

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February 26, 2022

Randall Krause

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Supplemental Response to RFI: Consent-Based Siting and Federal Interim Storage

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process? **Answer:** The Department should not approach any communities. Instead, it should put commercials on television featuring celebrities at nuclear power plants and spent fuel storage facilities. The commercials should include celebrities of all races and backgrounds.
4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed? **Answer:** A major barrier in small communities is the local power structure, usually just a few people, who are fearful of losing their influence if people smarter than them move into town.
6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting? **Answer:** Hollywood and major advertising agencies.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed? **Answer:** A major barrier is ignorance. Most people are afraid of anything nuclear. That is why celebrity involvement is important. Television commercials should show celebrities learning about spent fuel and becoming comfortable around storage facilities.

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system? **Answer:** After the Department puts on a nationwide media campaign with movie stars, singers, and comedians, many communities will volunteer to host a storage facility. The Department will not be accused of targeting anyone.

From: darrell lacy
Sent: Friday, March 4, 2022 4:39 PM
To: Consent Based Siting
CC: Sutton, Tim; Lorinda A. Wichman; Rick L. Spees; Jaynee Reeves
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage - Comments from Nye County Nevada
Attachments: Draft Nye County Comments - RFI on consent based siting process - Feb 2022.DOCX; Nye County Consent based siting plan comments final 2 28 17 a.docx

To whom it May Concern,
Thank you for the opportunity to submit comments.

I have attached draft comments pending final approval from the Nye County Commission specific to this RFI and a copy of comments from the 2017 solicitation for comments which is a more detailed discussion of the consent based siting process.

Nye County is the site county for Yucca Mountain and has over 30 years experience dealing with the issues surrounding siting and consent for a repository for spent fuel and HLW. As such we have a large amount of history and knowledge on this issue. We would be happy to discuss and share with the new DOE leadership.

Sincerely,

Darrell Lacy
Consultant to Nye County Nevada



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Comments of Nye County, Nevada, on the Department of Energy Notice of Request For Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities

The Board of County Commissioners of Nye County, Nevada, appreciates the opportunity to respond to the Department's RFI on using a consent-based process to site an interim nuclear waste facility. Nye County is the site county of Yucca Mountain, the Congressionally designated site for the permanent repository for high level nuclear waste. The designation was made pursuant to the provisions of the Nuclear Waste Policy Act (NWPA), as amended. The NWPA is still the law of the land and has not been repealed or further amended by Congress. As such, Nye County has been involved in the nuclear waste process since the 1970s. The County welcomes the opportunity to share its learned wisdom with the Department. These comments will address some of the specific questions posed by the RFI and will then reflect on the bigger picture.

Area 1: Consent-Based Siting Process, question number 4: What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

The primary barrier to getting a site for an interim nuclear waste storage facility is the absence of a plan to build and operate a permanent deep storage repository. Without a final resting place for the nuclear waste, every potential interim site must assume that the waste will not eventually be moved. In that case, the interim site will become a de facto permanent storage site. The NWPA called for the federal government to take possession of nuclear waste starting in 1989—32 years ago. Despite this length of time, and facing mounting financial penalties, the Department has no path forward on a permanent repository site. A prudent local or State government cannot assume that the program will go any more smoothly in the future. Accepting waste on an interim basis under the current circumstances would be a dereliction of duty.

Also, assuming that the federal government is unable to find a permanent waste site, it calls into question the design of the interim sites. In the permanent repository waste will be buried in a deep geological location. Plans for interim sites are not nearly as rigorous, storing waste canisters above ground. Yet, if the interim site becomes, in essence, a permanent site, what are the safety implications? Can nuclear waste be safely stored for decades in above ground storage sites? For the Department to be prudent and transparent in its consent-based siting program, it will have to admit that an interim site could become a permanent site. This will greatly increase the scrutiny on safety issues.

The only solution to these problems are for the Department to move aggressively on a permanent repository site. Only if the localities where potential interim sites will be located have the assurance that the waste will be moved in a timely fashion will they agree to hosting them. In other words, the Department is putting the cart before the horse with this exercise.

Question number 5: How should the Department work with local communities to establish reasonable expectation and plans concerning the duration of storage at federal interim storage facilities?

As referenced above, unless the Department proceeds on the permanent repository, the Department must stress that any location that is willing to accept an interim site must understand that it is possible and likely that it will be a de facto permanent site. That a permanent repository may never be developed. If a repository is built, the timeline for completion may be well beyond the expected lifetime of the interim site. Nuclear waste will be stored at the interim site for decades.

Also as referenced above, the Department must make clear that the Department and the scientific community believes that the ultimate safe resting place for nuclear waste is deep underground. If the interim site becomes permanent, the waste will be stored in a less than ideal manner.

Area 2: Question number 1: What barriers might prevent meaningful participation in a consent-based siting process and how could these barriers be mitigated or removed?

This question goes to the heart of the problem the Department had with the State of Nevada on the permanent repository at Yucca Mountain. The Department never made it clear to the State of Nevada the magnitude of benefits the State, and local counties, could receive from accepting the Yucca Mountain repository. Even today, the Nye County Commissioners believe that if the Department put a definite dollar amount offer on the table, the people of Nevada would pressure their leaders to proceed with the full licensing proceeding. If the proceeding demonstrated that the repository could not be built or operated safely, the Department would have to abandon the site. If it was found to be safe, it would solve many of the problems the nuclear waste program currently suffers from.

The Department has a responsibility not to waste money. However, the delays in the program have cost the federal government billions of dollars in contractual damages. At the same time construction costs have skyrocketed. Had the Department offered the State of Nevada and the local communities a reasonable package a decade ago, it would have saved the money.

Finally, and most importantly, if the Department had presented the State a reasonable package, or it did today, the funds would come from the Nuclear Waste Trust Fund which is paid by ratepayers. In other words, the payments to the State of Nevada would come from an independent source of funds, while the payments made to utilities for contractual damages comes from the judgment fund managed by the US Department of the Treasury. It is taxpayer money.

Taking a step back from the specific questions, the Nye County Commissioners do not believe that the Department will ever get a consent-based site designated. This is based on common sense along with the history of the program over the last decades. Here are the major reasons we believe this.

First of all, no one has defined what a consent-based process would look like. Of course, it would include the site county and State, but would consent also be required by adjoining counties? What if the adjacent county lines were close to the site? What if they were not close? How far out would local governments be included? What about adjacent States if the site was close to the State lines? Would consent be required of the Senators representing the State? The member of Congress representing the site area? What about any member of Congress from the

site State? What if the Congressional member was from the site State, and was a far distance from the site but was on the House Appropriations Committee?

Second, how is consent guaranteed over time? What if after the next election the new county commission goes from favoring the site to opposing it? What if after a State election a new Governor goes from supporting to opposing the site? What if a new member of the Congressional delegation opposes the site? Given the great lengths of time involved, there is no question that there will be changes in the political leadership in the site State and local governments.

Remember that the Nevada Legislature passed a resolution favoring a repository at Yucca Mountain in 1979. Also note that there are two proposed private interim sites under consideration, one in New Mexico and one in Texas. In both States the State leadership opposes the sites.

While it would be nice to achieve consent from a location for an interim waste storage site, we do not believe it is possible on purely a consent basis. Especially if there is no solution for the permanent site. Instead we believe that the Department must use two tools to make it happen. First, follow the law of the Nuclear Waste Policy Act, which, again, has never been repealed or amended. That calls for a review of Yucca Mountain. Second, the Department should negotiate a realistic benefits package with the State and the local governments. Do not let the public guess if there will be any benefits for them—make it clear that there are and they are substantial. Once that is done, the threat of an interim site becoming permanent goes away. Then again make it clear what level of benefits a State and site counties will receive for taking an interim site. There are still many pitfalls with this approach, but we do not believe any other has any chance of success.

Nye County, Nevada, Comments on Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste

Nye County appreciates the opportunity to provide comments on this document. By way of introduction to the specific comments, several general comments that help with the context of the specific comments are appropriate. These should help illustrate why Nye County reacts so negatively to the Department of Energy attempts to subvert the will of Congress, revisit considerations already decided in law, and create, without direct congressional involvement, a new high-level waste disposal strategy.

The *Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste* document was released by the Department of Energy on January 12, 2017. In an accompanying Federal Register notice,¹ the Department noted that it was designing a consent-based siting process to establish an integrated waste management system to transport, store, and dispose of commercial spent nuclear fuel and high-level radioactive waste. In such a consent-based siting approach, the Department noted that it would work with communities, Tribal Governments and States across the country that express interest in hosting federal consolidated interim storage facilities and disposal facilities for spent nuclear fuel and high-level radioactive waste as part of an integrated waste management system. The Department also noted that it was seeking input on the document.

The sequence of events resulting in the Blue Ribbon Commission on America's Nuclear Future Report to the Secretary in 2012,² and the Department of Energy, *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*,³ the precursors to the activity resulting in the *Draft Consent-Based Siting Process* document, were the result of deliberate actions by the Obama administration to fulfill commitments to dismantle the Yucca Mountain project made during Senator Obama's campaign for the presidency. These actions contravened existing law, and in fact were made without seeking the input and the consent of Congress.

In May 2007, Senator Obama's campaign for the presidency began in earnest, and opposition to Yucca Mountain was an essential element in the strategy to win Nevada's electoral votes. In a May 2007 letter to the *Las Vegas Review Journal*,⁴ he stated: "[a]fter spending billions of dollars on the Yucca Mountain Project, there are still significant questions about whether nuclear waste can be safely stored there. I believe a better short-term solution is to store nuclear waste on-site at the reactors where it is protected, or at a designated facility in the state where it is produced, until we find a safe, long-term disposal solution that is based on sound science. In the meantime, I believe all spending on Yucca Mountain should be redirected to other uses, such as improving the safety and security of spent fuel at plant sites around the country and exploring other long-term disposal options." In an October 2007 letter⁵ to Senator Reid, who at that time was the Senate Majority Leader, and Senator Barbara Boxer, then chair of the Senate Environment and Public Works Committee, he called on the leaders to abandon the project. He stated: "[i]n short, the selection of Yucca Mountain has failed, the time for debate on this site is over, and it is time to start exploring new alternatives for safe, long-term solutions based on sound science." After the election, Senator Obama traveled to Las Vegas to meet with Senator Reid. After the meeting Reid was interviewed by a reporter and asked about the fate of the Yucca Mountain Project in an Obama

¹ 82 FR 4333 January 13, 2017

² Blue Ribbon Commission on America's Nuclear Future, *Report to the Secretary of Energy*. January 2012

³ U.S. Department of Energy, *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*. January 2013.

⁴ Barack Obama, "Barack Obama Explains Yucca Mountain Stance." Letter to the Editor. *Las Vegas Review-Journal*. May 20, 2007.

⁵ Zachary Scott Edwards, "Yucca Nuclear Storage 'Has Failed.'" *Las Vegas Review-Journal*. October 31, 2007.

administration. Reid stated: “[l]isten, Yucca Mountain’s gone. Obama’s president, Yucca Mountain’s history.”⁶

By January 21, 2009, Steven Chu was Secretary of Energy, and actively working to dismantle the Yucca Mountain Project, initially by testifying that the science of the Yucca Mountain site was bad: “[w]hile it’s fair to say that the whole history of Yucca Mountain was more political than scientific, but also, very truthfully, I can say that given what we know today the repository looks less and less good. So now we’re in a situation where it can’t move forward.”⁷ When challenged and unable to present evidence to support his claim, Chu’s argument—and the administration’s argument against Yucca Mountain—changed to: *it’s unworkable*. To satisfy commitments made during the presidential campaign, the Secretary of Energy, without technical basis, and without consulting Congress, attempted to withdraw, with prejudice, the License Application that law⁸ directed the Department of Energy to prepare and submit to the Nuclear Regulatory Commission. In testimony⁹ before the House Committee on Science and Technology on March 3, 2010, Secretary Chu stated that in 2010 the Department of Energy would discontinue its application to the Nuclear Regulatory Commission for a license to construct a high-level waste geologic repository at Yucca Mountain, noting that both he and the president had made it clear that Yucca Mountain was not an option. On March 3, 2010, the Department of Energy filed its motion to withdraw the License Application with prejudice.¹⁰

The Department also unilaterally ceased work on the Yucca Mountain Project. Under an equitable interpretation of President Obama’s scientific integrity policy,¹¹ the Nuclear Regulatory Commission’s Safety Evaluation Report¹² which was nearing completion at that time,¹³ should have been released so the

⁶ Steve Tetereault, “Waste Critics See Opening,” *Las Vegas Review-Journal*. November 10, 2008.

⁷ Steven Chu, cited in March 24, 2010, House Appropriations Subcommittee Hearing questioning.

⁸ Nuclear Waste Policy Act of 1992, *Public Law 97-425*, as amended by *Public Law 100-203*, and, Joint Resolution Approving the Site at Yucca Mountain, Nevada, for the Development of a Repository for the Disposal of High-Level Radioactive Waste and Spent Nuclear Fuel, Pursuant to the Nuclear Waste Policy Act of 1982. *Public Law 107-200*. July 23, 2002.

⁹ Steven Chu, *Statement of Secretary Steven Chu, U.S. Department of Energy, Before the Committee on Science and Technology, U.S. House of Representatives: FY 2011 Budget Hearing*. March 3, 2010.

¹⁰ U.S. Nuclear Regulatory Commission, *U.S. Department of Energy’s Motion to Withdraw*, Atomic Safety and Licensing Board, Docket No. 63-001, ASLBP No. 09-892-HLW-CAB04. March 3, 2010.

¹¹ Barack Obama, *Memorandum for the Heads of Executive Departments and Agencies; Subject: Scientific Integrity*. White House, Office of the Press Secretary. March 9, 2009: “(c) When scientific or technological information is considered in policy decisions, the information should be subject to well-established scientific processes, including peer review where appropriate, and each agency should appropriately and accurately reflect that information in complying with and applying relevant statutory standards; and (d) Except for information that is properly restricted from disclosure under procedures established in accordance with statute, regulation, Executive Order, or Presidential Memorandum, each agency should make available to the public the scientific or technological findings or conclusions considered or relied on in policy decisions”

¹² U.S. Nuclear Regulatory Commission, *Safety Evaluation Report Related to Disposal of High-Level Radioactive Wastes in a Geologic Repository at Yucca Mountain, Nevada*. NUREG-1949, in five volumes.

¹³ In testimony before Congress, a Nuclear Regulatory Commission staff member testified that Volume 3 of the Safety Evaluation Report was complete in September 2010, when Chairman Jaczko directed that all work on the report stop. (Janet Kotra, Nuclear Regulatory Commission senior project manager, *Testimony Before Congressional Subcommittee on Environment and the Economy, Committee on Energy and Commerce*. Transcript pp. 11, 12. June 24, 2011.) Further testimony by the official responsible for leading the review of the license application noted that Volume 3 could have been ready for publication in September 2010 but was slowed because of direction from Jaczko not to issue the document before November 2010. Staff expected to issue Volume 3 in November 2010 and the other three volumes by March 2011. (Newton Kingman Stablein, Nuclear Regulatory Commission Chief of Project Management Branch, *Ibid.* pp 18,19) They went on to recount that in September 2010, commission staff were directed to stop all work on the Safety Evaluation Report volumes.

public had an opportunity to judge the soundness of the Yucca Mountain science for themselves. It seems likely that the only reason for withholding its publication was to allow the administration to attempt to maintain the façade that the actions had technical merit. To release them would have been potentially embarrassing to the president and Senator Reid, both of whom had argued that the science of Yucca Mountain was unsound. While the Safety Evaluation Report ultimately was completed and released, it required lawsuits to force the federal government to follow the existing law.¹⁴

Missing from these actions was an indication of how Congress might react to the Department of Energy unilaterally deciding that the national policy codified in the Nuclear Waste Policy Act was no longer appropriate. Secretary of Energy Chu was, in effect, assuming the authority and taking responsibility for ignoring the will of Congress. Such unilateral action had been undertaken once before by Secretary of Energy Harrington with disastrous results;¹⁵ the major difference in this situation was that the President was openly and actively participating in the effort.

In testimony¹⁶ before the House Committee on Science and Technology on March 3, 2010, Secretary Chu also stated that to deal with waste management, the administration would conduct a comprehensive review of the back end of the fuel cycle to provide recommendations for developing a solution to managing the nation's used nuclear fuel and its nuclear waste. This was the Blue Ribbon Commission on America's Nuclear Future, created by presidential directive.¹⁷ The Commission was to conduct a comprehensive review of policies for managing the back end of the nuclear fuel cycle, including all alternatives for the storage, processing, and disposal of civilian and defense used nuclear fuel and nuclear waste. Also, the Commission was to consider and analyze a broad range of technological and policy alternatives, and where appropriate, identify potential statutory changes. (emphasis added) The Commission was clear in stating that it was not a siting commission and did not propose any specific sites for any component of the waste management system; however, it did note that it recognized that current law establishes Yucca Mountain as the site for the first U.S. repository for spent fuel and high-level waste, provided the license application submitted by the Department of Energy meets relevant requirements. The Commission completed its report¹⁸ in 2012 and made a number of recommendations; the first recommendation was for a new, consent-based approach to siting future nuclear waste management facilities. This recommendation was key to the current Department effort to develop a consent-based siting process for consolidated storage and disposal facilities for spent nuclear fuel and high-level radioactive waste, and was integral to the development of the Department of Energy strategy to manage used nuclear fuel and high-level radioactive waste.¹⁹

¹⁴ In response to petitions from affected stakeholders, and in a protracted hearing, the Court of Appeals for the District of Columbia Circuit found that the president may not decline to follow a statutory mandate or prohibition simply because of policy objections and directed that the Nuclear Regulatory Commission must follow the Nuclear Waste Policy Act and complete its review of the Yucca Mountain License Application. (U.S. Court of Appeals for the District of Columbia Circuit, *In Re: Aiken County, et al., Petitioners. On Petition for Writ of Mandamus*. No. 11-1271. August 13, 2013)

¹⁵ Secretary of Energy John Harrington indefinitely suspended siting work for the second repository program on May 28, 1986. Congress reacted negatively, ultimately amending the Nuclear Waste Policy Act and selecting Yucca Mountain as the only site to be studied for the first repository program (see, for example, Chapter 7, Voegelé and Vieth, *Waste of a Mountain*. Nye County Press. 2016)

¹⁶ Steven Chu, *Statement of Secretary Steven Chu, U.S. Department of Energy, Before the Committee on Science and Technology, U.S. House of Representatives: FY 2011 Budget Hearing*. March 3, 2010.

¹⁷ Barack Obama, *Presidential Memorandum: Memorandum for the Secretary of Energy: Blue Ribbon Commission on America's Nuclear Future*. White House. Office of the Press Secretary. January 29, 2010.

¹⁸ Blue Ribbon Commission on America's Nuclear Future, *Report to the Secretary of Energy*. January 2012

¹⁹ U.S. Department of Energy, *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*. January 2013

The commission's recommendation for a consent-based siting process is predicated on examples of international success that are not relevant to the U.S. political structure, or in the case of the Waste Isolation Pilot Plant, by the Commission's admission "no one could have designed the process that was ultimately followed ahead of time nor could that process ever be replicated."²⁰ The commission's recommendation also is not sensitive to the history of development of existing law. In developing the legislation that led to the Nuclear Waste Policy Act, the question of whether the State in which the proposed repository site was to be located should have veto authority was examined. A major issue following the 1976 announcement of the National Waste Terminal Storage program²¹ and its search for sites for a high-level radioactive waste repository was whether a State had the authority to veto the federal government's siting decision. This became an overarching issue of great importance in drafting the 1982 Nuclear Waste Policy Act. The decision not to give States a veto was deliberate and long debated, and the consensus was — no. Congress retained the siting decision to itself.

The government organization with the most authoritative knowledge and perspective was the General Accounting Office. Its spokesman was the Comptroller General, who testified regarding these issues and carefully documented the agency's opinion.²² While the General Accounting Office could not make a decision for Congress, it could provide authoritative research, analysis, and advice about the issue and the potential consequences. In response to a congressional committee request, the General Accounting Office provided specific guidance in early 1981²³ regarding federal preemption: "[w]e further concluded that if all State concurrence efforts fail, the federal government may have to act unilaterally to override State and local opposition and select the best repository site available. The waste problem is already of such paramount importance that a solution must be obtained, even if one or more segments of the public are dissatisfied." The State Planning Council created under President Carter did not support the political position that States should have an absolute veto, and agreed that States should not have veto authority. The recommendation of the State Planning Council regarding the final siting decision for a high-level radioactive waste repository was for a statutorily defined conflict resolution mechanism that called upon the president or the Congress to make the final siting decision if the parties reached an impasse.²⁴

There were attempts to introduce provisions for a State veto in developing the Nuclear Waste Policy Act. Congressman Dingell believed that the Department of Energy may have exceeded its authority in giving certain States a veto over the establishment of nuclear waste repositories; he stated he was unaware of any statutory provision authorizing the Department to share decision-making responsibilities with the States. Senator McGovern offered an amendment to the 1978 Energy Research and Development Administration authorization bill that would have amended the Energy Reorganization Act of 1974²⁵ to prohibit contracting for or construction of a radioactive waste storage facility in the event a State legislature disapproved of the use of a particular site in the State. After a colloquy regarding the advisability of adopting the amendment, a majority of the Senate voted to lay it on the table.²⁶ Senator Church observed "... for years we have been trying to find a permanent depository for the wastes we have already created. As yet, we have not found a State government that has been willing to accept that depository. I think that

²⁰ Blue Ribbon Commission on America's Nuclear Future, *Report to the Secretary of Energy*. January 2012. p. 49.

²¹ Luther J. Carter, *Nuclear Imperatives and the Public Trust: Dealing with Radioactive Waste*. Washington, D.C.: Resources for the Future, 1987, p.148.

²² General Accounting Office, *The Nation's Nuclear Waste—Proposal for Organization and Siting*. EMD-79-77. B164052. June 21, 1979.

²³ General Accounting Office, *Is Spent Fuel or Waste from Reprocessed Spent Fuel Simpler to Dispose Of?* EMD-81-78. June 12, 1981. See Transmittal Letter from Acting Comptroller General.

²⁴ Richard W. Riley, chairman, and Vice Chairman Paul R. Hess, State Planning Council, "Appendix C: Executive Summary of the Interim Report of the State Planning Council to the President," in E. William Colglazer Jr., editor, *Politics of Nuclear Waste*. New York: Pergamon Press, 1982

²⁵ Energy Reorganization Act of 1974, *Public Law 93-438*

²⁶ 123 Cong Rec. S11643-11650 (daily ed. July 12, 1977).

it is a suggestion of what lies in store for the country if we adopt this amendment in its present form. The problem we face would become unsolvable.”

Moreover, Senator Proxmire was insistent on the protection of States’ rights to the maximum possible extent; he had a hold placed on the Waste Policy Act bill and was threatening to filibuster, which would have, in effect, killed the bill for that session of Congress. Two options were considered: first, a notice of disapproval submitted by the State would not be automatically effective unless one house of Congress supported the State’s position. This would put the burden of effecting the disapproval on the State, which was seen as comparable to the Department of Energy’s position that the site was suitable. Under the second option, which was accepted, the notice of disapproval was automatically effective unless both houses of Congress voted to override it. Senator Proxmire believed that no other action could do more to put the host State on an equal footing with the Department of Energy. In late December 1982, the last hurdle to the passage to the Nuclear Waste Policy Act was overcome. At the end of a four-year effort, the bill became law.²⁷

The Nuclear Waste Policy Act did address the issue of the role of the States in the decision making process. Section 116(b)(2) of the Nuclear Waste Policy Act includes provisions for a Notice of Disapproval: “[u]pon the submission by the President to the Congress of a recommendation of a site for a repository, the Governor or legislature of the State in which such site is located may disapprove the site designation and submit to the Congress a notice of disapproval.” By giving the State the opportunity to file a Notice of Disapproval to the Department’s site recommendation, which became effective unless Congress subsequently passed a notice of siting approval, the Act effectively set the level of authority of the Department and the State to be equal. Then, Congress got to make the final decision.

While the Nuclear Waste Policy Act does not include provisions for a State veto, or in other words, consent to development of a high-level waste facility in a State, section 117 (b) of the Nuclear Waste Policy Act does include provisions for a Consultation and Cooperation agreement: “.... the Secretary shall consult and cooperate with the Governor and legislature of such State and the governing body of any affected Indian tribe in an effort to resolve the concerns of such State and any affected Indian tribe regarding the public health and safety, environmental, and economic impacts of any such repository.” This covers essentially everything other than an outright veto; and, as noted, the Act included provisions for a Notice of Disapproval to be submitted by the selected State that would have to be overridden by both Houses of Congress.

The Act specified that the Department of Energy was required to enter into a Consultation-and-Cooperation agreement with the State for the purpose of addressing and resolving issues related to decision-making about the facility and the conditions surrounding its siting and operation. The Department attempted to initiate that effort with the State of Nevada, and were disregarded.²⁸ It was the position of the political leadership in Nevada to totally reject the determination that Yucca Mountain was suitable for characterization for a repository for high-level radioactive waste because the site selection process was so badly flawed and the Department of Energy could not be trusted.²⁹

²⁷ Luther Carter, *Nuclear Imperatives and the Public Trust*, pp. 224–226. See also Robert Vandenbosch and Susanne F. Vandenbosch, *Nuclear Stalemate: Political and Scientific Controversies*. Salt Lake City: University of Utah Press. 2007, p. 54.

²⁸ U.S. Department of Energy, *Draft Mission Plan Amendment*. DOE/RW-0128. Office of Civilian Radioactive Waste Management, Washington, D.C. January 1987.

²⁹ Governor Richard Bryan, *Testimony Before the Hearing on the Nuclear Waste Program*. Senate Committee on Energy and Natural Resources. S. Hrg. 100-230. Part 3. April 29, 1987

Ignoring the carefully crafted Nuclear Waste Policy Act provisions for a Consultation and Cooperation agreement, and the provisions for a Notice of Disapproval to be submitted by the selected State that would have to be overridden by both Houses of Congress, the Blue Ribbon Commission report and the Department of Energy Strategy assume that Congress will enact new legislation to direct the proposed consent-based strategy to manage used nuclear fuel and high-level radioactive waste.

That Strategy formed the basis for the proposed Senate legislation introduced in 2013 and 2015. The Nuclear Waste Administration Act of 2015— S. 854,³⁰ introduced in the Senate on March 24, 2015, establishes a Nuclear Waste Administration to provide for the permanent disposal of nuclear waste, including the siting, construction, and operation of **additional**³¹ repositories, a test and evaluation facility, and pilot and additional storage facilities.

The bill was sponsored by Senators Lamar Alexander (R-TN), Lisa Murkowski, (R-AK), Dianne Feinstein, (D-CA), and Maria Cantwell (D-WA) and is the same as S. 1240—the Nuclear Waste Administration Act of 2013 introduced in the 113th Congress. While this bill explicitly states it will terminate those authorities of the Secretary regarding siting, construction, and operation of repositories, storage facilities, or test and evaluation facilities which were not transferred to the Administrator, it did not address directly the issue of changing the law designating Yucca Mountain for development of a repository. Clarification for this can be found in the March 4, 2015 words of the Chairman Alexander of the Appropriations Subcommittee on Energy & Water Development:³² “[l]et me be clear: Yucca Mountain can and should be part of the solution. Federal law designates Yucca Mountain as the nation’s repository for used nuclear fuel. To continue to oppose Yucca Mountain because of radiation concerns is to ignore science – as well as the law. The next steps on Yucca Mountain include completing a supplemental environmental impact statement and restarting the hearings before the Atomic Safety and Licensing Board, which were suspended in September 2011. Money is available for these activities, and I want to hear why there is no request to use it.”

Of particular note, the language of S. 854 does not revoke the provisions of the Joint Resolution Approving the Site at Yucca Mountain, Nevada, for the Development of a Repository for the Disposal of High-Level Radioactive Waste and Spent Nuclear Fuel.³³

The House, however, has not shown an inclination to support the Department of Energy Strategy to the exclusion of Yucca Mountain. Chairman Shimkus of the House subcommittee with responsibility for management of nuclear waste, has made clear the House support is for moving forward with Yucca Mountain and not replacing it with an interim storage program: “[w]e’re open to interim but there always has to be a nexus to Yucca, otherwise you’re not going to have interim.” And: “[w]e in the Federal Government have an obligation to uphold the law to dispose of commercial spent nuclear fuel, as well as honor the commitment made to States who host sites to support our nuclear defense activities, including South Carolina, Idaho, and Washington State.” Shimkus also emphasized the bipartisan support that exists today in the House, which reflects that evident in the development of the Nuclear Waste Policy Act: “[l]et me state at the outset that the issue of the nation’s nuclear waste management policy is not a

³⁰ U.S. Senate, *Nuclear Waste Administration Act of 2015: S. 854*. 114th Congress. Introduced in the Senate on March 24, 2015. <https://www.congress.gov/bills/114/congress/senate-bill/854?q=%7B%22search%22%3A%5B%22Nuclear+Waste+Administration+Act+of+2015%22%5D%7D>.

³¹ Word used in bill summary: <https://www.congress.gov/bills/114/congress/senate-bill/854>

³² Senator Lamar Alexander, Chairman Appropriations Subcommittee on Energy & Water Development, *Hearing on FY16 Nuclear Regulatory Commission Budget: Opening Statement*. March 4, 2015.

³³ Joint Resolution Approving the Site at Yucca Mountain, Nevada, for the Development of a Repository for the Disposal of High-Level Radioactive Waste and Spent Nuclear Fuel, Pursuant to the Nuclear Waste Policy Act of 1982. *Public Law 107-200*. July 23, 2002.

partisan issue. The House of Representatives has repeatedly supported Yucca Mountain in an overwhelming and bipartisan manner. Last summer, efforts to abandon Yucca Mountain were defeated on the House floor with the body voting four to one in favor of Yucca Mountain. This includes nearly 2/3 of the Chamber's Democrats."

In summary, the issue of a State veto and Consultation and Cooperation were Congress' solution to a consent-based process, and were addressed and decided in the Nuclear Waste Policy Act as amended. Congress did not support a consent-based approach to siting. From 1983 to 2008, there was bipartisan support for the Nuclear Waste Policy Act and the Department of Energy followed the directives of law in determining the suitability of the Yucca Mountain site. All of the lawsuits against the selection of the Yucca Mountain site were dismissed, although the time of compliance in the Environmental Protection Agency standard was remanded and repromulgated. In 2008 a new administration decided, without consulting Congress, not to follow the law, dismantled the legally mandated program, which had filed the required license application, which was under review by the Nuclear Regulatory Commission staff, and attempted to create a new consent-based high-level waste disposal strategy with an assumption that Congress would support the new concept. The administration has refused to seek funding for the program. It created a Blue Ribbon Commission on America's Nuclear Future, the recommendations of which were embodied in a new Department of Energy Strategy for a consent-based approach to siting high-level waste storage and disposal facilities. While the Department assumes congressional support for changing existing law, neither house has shown a predisposition to abandon the Yucca Mountain program.

Specific Comments by Section of the Draft Consent-Based Siting Process Document

1 Introduction

The Administration's Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste,³⁴ notes that it is seeking to develop "a phased, adaptive, and consent-based approach to siting and implementing a comprehensive management and disposal system" for spent nuclear fuel and high-level radioactive waste. This Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste attempts to implement that strategy without clear direction from Congress as an entity to do so. The Strategy is based on the Blue Ribbon Commission on America's Nuclear Future report³⁵ to the Secretary of Energy that was produced because the administration unilaterally decided not to follow existing law, dismantled the Yucca Mountain program, and was forced to do something in an attempt to forestall further criticism and damages arising from the Department of Energy finding itself in default on legitimate contracts to take title to the nation's spent nuclear fuel.

The concept of a consent-based approach to siting high-level nuclear waste facilities is not new. In early 1978, the Department of Energy was directed by President Carter to convene a task force to study disposal of high-level radioactive waste. Members of the task force were to be drawn from numerous federal agencies so that all aspects associated with the effort—including a valid technical solution that was acceptable politically—could be developed.

President Carter eventually developed a set of overarching principles related to radioactive waste management.³⁶ These included: federal, state, and local institutions would work collaboratively; State consultation and concurrence would lead to an acceptable solution of the waste disposal problem only if

³⁴ U.S. Department of Energy, *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*, January 2013.

³⁵ Blue Ribbon Commission on America's Nuclear Future, *Report to the Secretary of Energy*, January 2012.

³⁶ See, for example, Michael Voegele and Donald Vieth. *Waste of a Mountain*. Nye County Press. 2016 Chapter 5.

the states participated as partners in the program being put forward; and the right of federal preemption if relations between the federal government and the state reached an impasse was to be preserved. (emphasis added). Carter's principles were well known at the time a few years later when debate began on the legislation that eventually became the Nuclear Waste Policy Act.

It is important to note that Congress debated the issue of a State veto — in other words consent— and rather than concurrence, as in the Carter principles, opted for cooperation, and a Notice of Disapproval that would have to be overridden by both Houses of Congress. Congress found that the Department could not relinquish its authority under the Energy Reorganization Act of 1974³⁷

Clearly Congress was aware of the difference between concurrence and cooperation, as amendments were offered during work on the Nuclear Waste Policy Act in attempts to give veto authority to a State selected to host a repository. Ultimately, Congress elected to retain that authority.

No convincing argument is presented in the Draft Consent-Based Siting Process document that would suggest that Congress, objectively revisiting the arguments underlying the Nuclear Waste Policy Act, would reach a conclusion supportive of the Department's Strategy for consent-based siting. Moreover, there is no realism in the approach to recognize the amount of time that would be needed to implement this draft consent-based siting process. There are several significant time line issues that must be addressed satisfactorily if the United States is to develop consent based, consolidated interim storage ahead of a repository.³⁸ To avoid the types of criticism levied against development of the current regulations, it would be appropriate to wait until new policy has been developed and codified in an amended Nuclear Waste Policy Act before promulgation of new standards and regulations. In summary, they are:

Change United States disposal policy and enact it in law:

1. Change the law, HJR 87, PL 107-200, designating Yucca Mountain for the development of a repository.
2. Bring new nuclear waste legislation to the floor of the Senate, overcoming existing House support for Yucca Mountain
3. Change the longstanding focus of Congress from disposal to storage
4. Change the funding concepts embodied in the Nuclear Waste Policy Act to allow the Nuclear Waste fund to be used to pay for interim storage
5. Reverse the Congressional policy not to give states or tribes veto or consent authority, and to reserve to Congress the authority to override a state or tribal disapproval

Items 1 through 5 all deal with changing United States disposal policy and enacting it in law. It is very difficult to estimate the amount of time that it would take to change the Nuclear Waste Policy Act; it is also difficult to imagine that all five of these impediments could be overcome in a single action. Suffice it to say that it is not likely that the action could be initiated today, given the current stances of the House and Senate, and that it is not likely that the dismantlement of the Nuclear Waste Policy Act could occur on a schedule faster than it took to develop it, considering the major policy changes that would have to be worked out. An estimate of 2 to 4 years to enact these changes years is probably optimistic.

³⁷ Energy Reorganization Act of 1974, *Public Law 93-438*.

³⁸ See: Michael D Voegelé, and Donald Vieth. *The Time Needed to Implement the Blue Ribbon Commission Recommendation on Interim Storage*. WM2013 Conference, February 24 – 28, 2013, Phoenix, Arizona USA. Paper 13124

Promulgate new Regulations:

6. Promulgate interim storage facility siting regulations to reflect the new policies after such changes to policy and law
7. Complete already underway changes to storage and transportation regulations, possibly incorporating changes to reflect changes to waste disposal law
8. Promulgate new repository siting regulations if the interim storage facility was to support repository development

There is precedent for developing regulations and standards to implement the Nuclear Waste Policy Act (items 6, 7 and 8). The legislative guidance for the Yucca Mountain site specific regulations was given in 1992, and the required National Academy of Sciences input was available by 1995. Drafts of the Environmental Protection Agency, Nuclear Regulatory Commission, and Department of Energy regulations were available by 1999, and were finalized by 2002. Lawsuits over the licensing regulations dragged out the process another 6 to 7 years, but the siting criteria were not overturned. From the completion of the National Academy of Sciences guidance to application of the siting criteria took 7 years, which is probably not an unreasonable estimate of the minimum amount of time to develop these types of regulations, given the Blue Ribbon Commission recommendations for the types of regulations, the fact that to strictly meet the recommendation the regulations could not be developed parallel, and the sophistication of the opponents of nuclear power and waste disposal in prolonging such matters.

Identify Sites:

9. Identify volunteer sites, negotiate agreements, and get Congressional approval for negotiated benefits packages

It does not seem likely that the time that would be required to identify sites, negotiate agreements, and get Congressional approval for negotiated benefits packages could be much less than 1 or 2 years. To be consistent with the Blue Ribbon Commission recommendations, this too could not start until the previous steps were complete.

Build Facility

10. Design, license and develop the interim storage facility

Considering the first three sets of activities to proceed sequentially results in an estimate of the amount of time to prepare for initiation of siting an independent storage facility on the order of 10 to 12 years. Adding the time to design, license, and develop an interim storage facility, in a location where the local community wanted it, which is on the order of 12 years, results in a total time to get to operation of a federal independent storage facility on the order of 25 years.

The Department of Energy Strategy and the Draft Consent-Based Siting Process document optimistically speculate that a pilot interim storage facility and an interim storage facility would relieve pressure on the United States government to take possession of the spent nuclear fuel in storage at the nation's nuclear power plants. The utility owners have legitimate contracts requiring the federal government to take title and possession of this spent nuclear fuel by January 31, 1998. The government is obviously in default on these contracts and damages have been awarded to a number of utilities. Those settlements assumed that the government would begin to take the spent nuclear fuel in 2017; clearly additional lawsuits and increased damage payments are to be expected.

Searching for a volunteer site for an interim storage facility with a promise of the state able to veto the facility at any time makes little sense because the state government and its acceptance could change during the time it would take to develop the facility, even assuming that Congress would reverse its long-standing position. Following the existing law and completing the Yucca Mountain licensing hearing makes more sense.

2 Rationale for Moving Forward with a Consent-Based Siting Process

The Draft Consent-Based Siting Process document notes that the Department of Energy concludes, grounded in conclusions reached by previous studies and real-world experience with siting controversial facilities in the United States and elsewhere, that a consent-based process is more likely to deliver successful outcomes. It is important to note that the international examples of successful consent-based siting cited by the Blue Ribbon Commission on America's Nuclear Future are not relevant to the United States political situation. In the Scandinavian examples, there was no sovereign State entity involved in the siting. Local communities negotiated directly with the federal government. In Nevada, the local community, as well as the situs county and eight of the surrounding counties have resolutions asking that the Yucca Mountain license application hearings be conducted. This is not consent in the sense of the Department of Energy document; it is however, an acknowledgement, by the Counties and local community, of acceptance of the Yucca Mountain Project.

As to siting experience in the United States, the Waste Isolation Pilot Plant was not sited by a consent-based process. The critical words in the Blue Ribbon Commission report are *have an opportunity to decide*, which means that the community or state can say yes, we accept, or they can say no, we do not accept. The commission's definition also gives the absolute veto authority to the state with whom the federal government is negotiating. The absolute veto was a concession to which the chair of the House Armed Services Committee, Mel Price, in directing the siting of the Waste Isolation Pilot Plant, would not agree.

The issue of a consent-based siting process for the Waste Isolation Pilot Plant has been summarized succinctly.³⁹ When the Waste Isolation Pilot Plant authorization bill came to the House floor for a vote, Price agreed to reverse his committee's recommendation and include funding for Waste Isolation Pilot Plant *but without state participation in decision making*. Without consulting New Mexico officials, he offered an amendment stipulating that the plant be constructed solely as a defense facility and that any state veto be prohibited. "Unfortunately, the Waste Isolation Pilot Plant project has become embroiled in bureaucratic politics within the current administration and in the politics of the state of New Mexico," Price said in a speech. "I think that even those in the highest levels of management in the Department of Energy will admit that the project has been mishandled by the Department." His amendment, he said, "will simply return the project to the same status that it was when it was first presented to our committee." *The inclusion of the prohibition of state veto language, he added, reflected the fact that a state government could not thwart the federal government's will.* "I do not believe that any member of this body would agree to the expenditure of federal funds for the purposes of constructing any kind of a federal project which, after its completion, could not be used as a result of political action within a state," he said. (emphasis added)

Without acknowledgement of Price's action to prevent a state veto, the Blue Ribbon Commission continued to foster the perception that the site selection process for the Waste Isolation Pilot Plant was consent-based.

³⁹ Chuck McCutcheon, *Nuclear Reaction: The Politics Of Opening A Radioactive Waste Disposal Site*. Albuquerque, NM: University of New Mexico Press, 2002 p. 72

Regarding the “conclusions reached by previous studies,” the National Academy of Sciences’ study⁴⁰ was done at the request of the Department of Energy, and asked the for advice on operational strategies for the development of a geologic repository for high-level waste. In the letter requesting this study, the Department sought advice on strategies it could pursue for staging the design, construction, operation, and closure of a repository in a safe, secure, cost effective, and societally acceptable fashion. The report does not directly address the consent of the host state. Rather, it focused on achieving the degree of technical and societal consensus needed to begin waste emplacement, rather than on the emplacement of all waste. In other words, this is in the context of adaptive staging, and consensus could just as easily be interpreted to mean a successful license application.

3 Types of Facilities

The Draft Consent-Based Siting Process document notes that “DOE is committed to working with tribal, state, and local authorities, including state regional groups, to address transportation issues and respond to the concerns of affected communities.” Unfortunately, there is convincing evidence that the Department of Energy does not take this “commitment” seriously.

The Department of Energy has a significant quantity of special nuclear material, referred to as U-233 (uranium-233), although the uranium content of this material by isotope is 76% U-235 and 10% U-233. Small quantities of U-232 make this material radiologically hot, leading to a requirement for remote handling. The material is from the Consolidated Edison Uranium Solidification Project and exists in a ceramic matrix solidified in small stainless steel canisters. Because of the mounting costs of this cleanup, the Department proposed a new approach to dispose of this material directly, without further processing. The approach is to dispose the material in shallow trenches at the Nevada National Security Site. The Department’s rationale that these uranium materials can be considered low-level radioactive waste is based on the argument that the materials meet the requirements of the Nevada National Security Site Waste Acceptance Criteria document, which references the Nuclear Regulatory Commission’s 10 CFR Part 61 rule regulating commercial low level waste disposal.⁴¹

Notwithstanding the fact that the material is 76% U-235 and not dissimilar to the materials that would be disposed in a repository at Yucca Mountain as high-level waste, the Department of Energy refused to meet with Nye County officials to discuss disposal of this material even though the material was to be buried in Area 5 of the Nevada National Security Site, which is located entirely in Nye County. This does not speak well of a “commitment” to working with tribal, state, and local authorities, including state regional groups, to address and respond to the concerns of affected communities

3.2 Pilot Interim Storage

The Draft Consent-Based Siting Process document notes that the Department of Energy Strategy calls for the development of a pilot interim storage facility with the capability to transfer large dry storage canisters from transportation casks into dry storage. The current concept for this type of facility includes constructing and operating a canister handling building, a canister transfer facility, and a storage cask fabrication facility.

Missing from this concept is the ability to anticipate and accommodate the needs of the eventual repository waste package design. Depending on the medium selected for an eventual repository, and the

⁴⁰ National Research Council of the National Academies, *One Step at a Time: The Staged Development of Geologic Repositories for High-Level Radioactive Waste*, 2003.

⁴¹ See: Michael Voegele, Joseph Ziegler, and Darrell Lacy. *Disposal of U-233 as Low Level Waste at the Nevada Nuclear Security Site*. WM2014 Conference, March 2 – 6, 2014, Phoenix, Arizona, USA Paper 14175

thermal loading strategies, waste package capacities could be very different. Without advance knowledge of these requirements, significant reworking, and repackaging, could be required. Regardless of whether this is to be done at the storage facility or repository, additional handling means additional worker exposure, which would be exacerbated if the canisters were to be repackaged.

A better solution would be to implement a repository design that could accommodate the storage canisters in waste packages, as was the case for Yucca Mountain.

3.3 Consolidated Interim Storage

The Draft Consent-Based Siting Process document notes that the storage facility could potentially be co-located with the pilot facility and/or a geologic repository, and could accommodate a much broader variety of storage systems. Under current law there are a number of restrictions and limitations. Nuclear Waste Policy Act:

114 (d) The Commission decision approving the first such application shall prohibit the emplacement in the first repository of a quantity of spent fuel containing in excess of 70,000 metric tons of heavy metal or a quantity of solidified high-level radioactive waste resulting from the reprocessing of such a quantity of spent fuel until such time as a second repository is in operation. In the event that a monitored retrievable storage facility, approved pursuant to subtitle C of this Act, shall be located, or is planned to be located, within 50 miles of the first repository, then the Commission decision approving the first such application shall prohibit the emplacement of a quantity of spent fuel containing in excess of 70,000 metric tons of heavy metal or a quantity of solidified high-level radioactive waste resulting from the reprocessing of spent fuel in both the repository and monitored retrievable storage facility until such time as a second repository is in operation.

141 (g) Limitation. No monitored retrievable storage facility developed pursuant to this section may be constructed in any State in which there is located any site approved for site characterization under section 112. The restriction in the preceding sentence shall only apply until such time as the Secretary decides that such candidate site is no longer a candidate site under consideration for development as a repository. Such restriction shall continue to apply to any site selected for construction as a repository

145 (b) Limitation. The Secretary may not select a site under subsection (a) until the Secretary recommends to the President the approval of a site for development as a Repository

148 (d) Licensing conditions. Any license issued by the Commission for a monitored retrievable storage facility under this section shall provide that –(1) construction of such facility may not begin until the Commission has issued a license for the construction of a repository

These limitations are incorporated in 10 CFR Part 72 for an independent spent fuel storage installation or monitored retrievable storage facility owned and operated by the Department of Energy.⁴²

There are legitimate and sound reasons for these restrictions and limitations. First, there were concerns that if an interim storage facility were developed before a repository was licensed, the interim storage facility could become the *de facto* final resting place for the wastes. These concerns date back to the early 1970s when the government, faced by failures in the repository program, attempted to develop the

⁴² U.S. Nuclear Regulatory Commission. Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste. 10 CFR 72.96.

Retrievable Surface Storage Facility program.⁴³

The primary comments that caused the termination of the Retrievable Surface Storage Facility approach to management of the high-level radioactive wastes were from the Environmental Protection Agency regarding the Draft Environmental Statement. The Environmental Protection Agency's critical words⁴⁴ included:

“[t]he development of an environmentally acceptable system for permanent disposal of nuclear generated radioactive waste would appear to be a high priority program that is essential for the development of nuclear power. However, the draft statement does not ... reflect either the priority attached to this overall program by the AEC nor an indication for the resources required. Because of the overwhelming need to develop an environmentally acceptable ultimate disposal method and the realization that there is a risk of failure in any research and development effort, we believe that work on promising alternatives should be pursued concurrently. A major concern ... is the possibility that economic factors could later dictate utilization of the facility as a permanent repository, contrary to the stated intent to make the RSSF interim in nature. Economic factors would consist mainly of the fiscal investment attendant to its construction and the activities which arise in the commercial segment of the economy to support its operation. Since there are controlling environmental factors that must be considered before final disposition of the RSSF, it is important that these factors never be allowed to become secondary to economic factors in the decision making process. Vigorous and timely pursuit of ultimate disposal techniques would assist in negating such a possibility.” (emphasis added)

The second concern was a fundamental underlying principle of the Nuclear Waste Policy Act—no one state would have to take all of the wastes. This is why there were prohibitions for co-locating a repository and interim storage facility in the same state.

The Draft Consent-Based Siting Process document and the Department of Energy Strategy document assume that Congress would be willing to develop new legislation that would obviate these restrictions and limitations. However, it is equally likely that debate on legislation to replace the Nuclear Waste Policy Act would result in these restrictions and limitations being retained.

3.4 Deep Geologic Disposal

The Draft Consent-Based Siting Process document notes that “[a]fter the President’s March 2015 finding that the development of a repository for defense high-level radioactive waste only is required, DOE also has been planning for a separate repository for the disposal of SNF and HLW resulting from atomic energy defense activities and/or DOE research and development activities (hereinafter referred to as a defense waste repository).”

Nuclear Waste Policy Act Section 8(b)(1) notes that ... “the President shall evaluate the use of disposal capacity at one or more repositories ... for the disposal of high-level radioactive waste resulting from atomic energy defense activities. Such evaluation shall take into consideration factors relating to cost efficiency, health and safety, regulation, transportation, public acceptability, and national security.” And Section 8(b)(2) notes “[u]nless the President finds, after conducting the evaluation required in paragraph (1), that the development of a repository for the disposal of high-level radioactive waste resulting from atomic energy defense activities only is required, taking into account all of the factors described in such

⁴³ See: Michael D. Voegele and Donald L. Vieth. *Waste of a Mountain*. Chapter 5

⁴⁴ Environmental Protection Agency, *Letter from Sheldon Meyers to Robert Seamans*. November 15, 1974

subsection, the Secretary shall proceed promptly with arrangement for the use of one or more of the repositories to be developed under subtitle A of title I for the disposal of such waste.” (emphasis added)

The highlighted material in the above portion of the Nuclear Waste Policy Act is explicit in the factors that the president is to consider in making the determination of the need for a separate defense waste only repository. Nowhere in these factors is a provision for a presidential decision based simply on the fact that the administration elected not to follow the law, dismantle the Yucca Mountain program, and attempt to make progress by substituting a repository for defense wastes only.

Furthermore, the Government Accountability Office, in reviewing the president’s decision noted that:⁴⁵ “[t]he information that the Department of Energy (DOE) provided to the President about whether a separate defense waste repository was required did not quantify cited benefits, when possible, show how these benefits could be achieved, or show the risks if certain benefits could not be realized as planned,” further illustrating that the decision was made without regard to the requirements of the Nuclear Waste Policy Act.

The Draft Consent-Based Siting Process document also notes that borehole disposal is another form of deep geologic disposal that may be appropriate for smaller waste forms. For the purposes of this commentary, it is sufficient to note that here as well, the Department of Energy has performed poorly in interaction with local communities to obtain permission to perform even the experiments without nuclear material.

4 General Design Principles for a Consent-Based Siting Process

Consistent with the significant time line issues discussed in the comments for Section 1 that must be addressed satisfactorily if the United States is to develop consent based, consolidated interim storage ahead of a repository, there are multiple concerns for the proposed General Design Principles for a Consent-Based Siting Process. The design principles do not recognize the importance of the role of the Nuclear Regulatory Commission, particularly its authorities and regulations. The design principles appear to be more focused on an Environmental Impact Statement approach than the rigorous demonstration of safety required by the Nuclear Regulatory Commission. While the design principles recognize the importance of the priority of safety, they neglect the early determination of the quality of the site and its importance in an early determination of the potential for the site to meet stringent safety requirements. It fails to provide sufficient background to allow the participants to comprehend the level of preparedness each party of the agreement will have when they sit down for the first time to initiate discussions. To illustrate the point here, it is appropriate to rearrange and group the design principles as follows. The first grouping, illustrates the importance of the role for the Nuclear Regulatory Commission.

Group 1

- Regulatory Requirements
- Prioritization of Safety

While the Nuclear Regulatory Commission certainly is interested in the environmental impacts of the proposed action—the second grouping— its principal focus will be on the demonstration of safety. Siting

⁴⁵ U.S. Government Accountability Office. *Nuclear Waste: Benefits and Costs Should be Better Understood before DOE Commits to a Separate Repository for Defense Waste*. GAO-17-174. January, 2017. Note that the report responded to a request from the Chairman and Ranking Member of the Senate Armed Services Subcommittee on Strategic Forces asking GAO to review DOE’s efforts to permanently dispose of defense HLW separate from commercial SNF

criteria, which will have to be a part of determining whether or not a given site has the potential to meet the stringent safety requirements, are not mentioned in the design criteria, yet there is no other way to begin to determine whether there is a valid reason for considering a site for nuclear facility. Without site specific data and early evaluations of the validity of a site, there is little reason to pursue negotiations with a community or the other entities that need to concur.

There must be a valid surrogate evaluation method for assessing the likelihood that a particular site will be able to meet the Nuclear Regulatory Commission licensing requirements. Even grants to develop data bases to make early determinations of the potential suitability of a site need to be based on some likelihood for potential for a successful safety demonstration. There can be little doubt that, as in the case of the Nuclear Waste Negotiator⁴⁶ established under the amendment of the Nuclear Waste Policy Act, communities with no intention of committing to the development of a facility will be more than happy to apply for grants to study a site.

Incidentally, while it may seem as though there is an existing generic repository licensing regulation, the Nuclear Regulatory Commission has gone on record that the only reason that they did not change Part 60 when Part 63⁴⁷ was promulgated for Yucca Mountain using a new risk informed - performance based strategy was that they did not believe that there was a need for Part 60. From a presentation at a Nuclear Waste Technical Review Board meeting, the Nuclear Regulatory Commission said:

“Part 63 does not have separate quantitative subsystem requirements. There is a reason it doesn’t. We walked away from that in 63. I thought we made it clear when we published 63 that we said the only reason they stayed in 60 was, it was a matter of efficiency. We weren’t going to bother to change it, because there was no need for 60 I believe we tried to make it clear that the NRC has no intention of ever going back to quantitative subsystem requirements”⁴⁸

Similarly, there is an expectation that the Siting Guidelines of 10 CFR 960,⁴⁹ which are based on subsystem performance requirements as well, are generically applicable for siting a repository. Careful examination of those Guidelines will show that they are linked inextricably to Part 60 and therefore, not supported by current Nuclear Regulatory Commission logic.

A Nuclear Regulatory Commission license will require the preparation of an Environmental Impact Statement in order for the Nuclear Regulatory Commission to fulfill its responsibilities under 10 CFR Part 51.⁵⁰ The second group of design criteria reflect criteria expected to be part of an Environmental Impact Statement process.

Group 2

- Environmental Responsibility
- Trust Relationship with Indian Tribes
- Environmental Justice
- Equal Treatment and Full Consideration of Impacts

⁴⁶ Nuclear Waste Policy Act. *Public Law 97-425 as amended by Public Law 100-203*. Title IV.

⁴⁷ U.S. Nuclear Regulatory Commission. 10 CFR Part 60, *Disposal of High-Level Radioactive Wastes in Geologic Repositories*. And: 10 CFR Part 63, *Disposal of High-Level Radioactive Wastes in a Proposed Geologic Repository at Yucca Mountain, Nevada*.

⁴⁸ McCartin, T. 2012. *United States Nuclear Waste Technical Review Board, Spring Board Meeting*. Transcript from March 7, 2012.

⁴⁹ 10 CFR Part 960, *General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories*

⁵⁰ U.S. Nuclear Regulatory Commission. 10 CFR Part 51. *Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions*.

- Community Well-being
- Transparency

While not the principal concern of the Nuclear Regulatory Commission in granting a nuclear facility license, these are legitimate considerations. Precedent exists to demonstrate the expectations of both the Nuclear Regulatory Commission in accepting an Environmental Impact Statement and the community affected by the proposed action. It is difficult to see anything new here.

The third group of design criteria reflect an initiative of the Department of Energy to encourage community participation.

Group 3

- Stepwise and Collaborative Decision-Making that is Objective and Science-Based
- Informed Participation

Here the Department of Energy completely misses the fact that there exists international precedent. A widely accepted approach for documenting the basis for the understanding of the disposal system, describing the key arguments for its safety, and acknowledging the unresolved uncertainties and of their safety significance is a document known as a Safety Case.⁵¹ The Safety Case is developed to support all aspects of development of the disposal concept and elucidates the approaches for the management of issues related to such development. This provides a basis for making decisions relating to the development, operation, and closure of the facility, and allows attention be focused areas where further understanding of those aspects influencing the safety of the geological disposal facility is needed. The development of a Safety Case and supporting safety assessments for review by the regulator and other interested parties is central to the development, operation, and closure of a geological disposal facility.

The development, including the siting, design, construction, operation, and closure, of a geologic disposal facility is likely to take place over several decades. In most countries, plans for repository development envision the disposal facility being developed in a series of steps. The Safety Case serves an important role in informing stakeholders about the progress being made as these steps proceed. The steps involve decisions about identifying sites as possible candidates, screening against well-defined criteria, performing site characterization studies on those sites selected for further evaluation, recommending a site for development as a repository, participating in the licensing proceedings for the repository facility, and the construction, operation, closure, and decommissioning of the facility. Each of these steps involves, in an iterative manner: the accumulation and assessment of necessary data; the development of disposal concepts; studies for design and safety assessment with progressively improving data; technical and regulatory reviews; public consultations; and political decisions. The Safety Case helps support transparency and provides information, which matures with the evolution of the program, to all stakeholders. The step by step approach, together with the consideration of a range of options for the disposal facility, is expected to be responsive to new information and advances in technologies; address social-political aspects; and preserve the option of retrieving the waste after its emplacement if deemed appropriate.

At the heart of a Safety Case is the synthesis of evidence, analyses, and arguments that quantify and substantiate a claim that a repository will be safe after closure and the time of reliance on active control and monitoring of the facility. The Safety Case becomes more comprehensive and rigorous as a program

⁵¹ International Atomic Energy Agency, 2006, *Geological Disposal Of Radioactive Waste*, IAEA Safety Standards Series No. WS-R-4 International Atomic Energy Agency and the Organisation for Economic Co-operation and Development / Nuclear Energy Agency, Vienna. And. Organisation for Economic Co-operation and Development, 2004, *Post-Closure Safety Case For Geological Repositories: Nature And Purpose*, Nuclear Energy Agency No. 3679

progresses, and can be a key part of decision making at several steps in the repository planning and implementation process. A key function of the Safety Case is to provide a platform for informed discussion whereby interested parties can assess their own levels of confidence in a project, determine any reservations they may have about the project at a given planning and development stage, and identify the issues that may be a cause for concern or on which further work may be required. Safety assessments are carried out periodically throughout repository planning, construction, operation, and closure phases, and are used to develop and progressively update the Safety Case.

A safety assessment is an analysis to predict the long-term performance of the overall system and its impact and confidence in the assessment of safety, where the performance measure is radiological impact or some other global measure of impact on safety.⁵² Within the current U.S. regulatory framework, performance assessment is defined essentially synonymously with this definition of safety assessment.

A safety assessment addresses the ability of a site and repository facility design to meet the applicable technical requirements and provide for the safety functions. Safety assessment includes quantification of the overall level of performance, analysis of the associated uncertainties and comparison with the relevant design requirements and safety standards. As site investigations progress, safety assessments become increasingly refined, and at the end of a site investigation, sufficient data will be available to support a safety assessment to demonstrate compliance with regulatory safety standards. Safety assessments also identify any significant deficiencies in scientific understanding, data, or analysis that might affect the results presented. Depending on the stage of development, safety assessments may be used to aid in focusing research, and their results may be used to assess compliance with the various safety objectives and standards

It is noted in passing that the Department of Energy actions in dismantling the Yucca Mountain program were neither objective nor science based; the Department of Energy track record is not stellar.

The fourth group reflects a Department of Energy assumption that Congress would reverse its position about a State veto.

Group 4

- Voluntariness/Right to Withdraw

As has been mentioned numerous times in these comments, Congress has not in the past considered it appropriate to allow a State to veto a siting decision for a spent nuclear fuel or high-level waste facility and codified that in law in the Nuclear Waste Policy Act. The first attempt was made, in 1978, to introduce an absolute veto into legislation related to siting the high-level radioactive waste repository. This attempt was made by Senator McGovern and is documented in a letter from the General Accounting Office to Representative John Dingell, chair of the Commerce Committee.⁵³ Dingell requested background information and the General Accounting Office provided a detailed letter report that explained the general background on a state veto, which included McGovern's legislative attempt. Representative Dingell was concerned about the Department of Energy's apparent commitment to state veto authority in agreements with various states. The Comptroller General noted:

“The lack of such authority, before the enactment of the DOE Organization Act, was recognized in Senate debate on the 1978 ERDA authorization bill. Senator McGovern offered an amendment to the

⁵² Organisation for Economic Co-operation and Development, 1999, *Confidence in the Long-Term Safety of Deep Geological Repositories: Its Development and Communication*, Nuclear Energy Agency Vienna

⁵³ Comptroller General of the United States, *Letter to Representative John Dingell*. June 19, 1978.

bill which would have amended the Energy Act of 1974 to prohibit contracting for or construction of a radioactive waste storage facility in the event a state legislature by resolution or law, or a state-wide referendum, disapproves of the use of a particular site in the state. After a colloquy regarding the advisability of adopting the amendment, a majority of the Senate voted to “lay it on the table.”⁵⁴

5 Siting Process

5.1 Draft Steps in the Siting Process

In addition to the comments provided on the design criteria of Section 4, it is important to note that timing of the development of the legislation and regulations is critical to the success of the program. One of the most severe criticisms of the Yucca Mountain program was that the regulations were changed to fit the site. In reality, regulations were changed because an unsaturated zone site had not been considered when the original regulations were promulgated. To compound the situation, when Congress acted to select Yucca Mountain as the only site to be studied, it selected the one site/medium type that was not considered when the Nuclear Regulatory Commission and Environmental Protection Agency regulations were developed

The only way to prevent such criticism for the proposed program would be to ensure that the legislation, standards, regulations, and siting criteria are developed sequentially. With regard to the phases for the draft steps in the siting process, there are a number of places where this concern is not appreciated. First, before any consent-based siting process can begin, there must be new legislation that clearly indicates that Congress has reversed its position on a State veto, is willing to authorize a consent-based program, and has decided what to do about Yucca Mountain. Only then is it realistic to begin the process of seeking a volunteer site. However, before any decisions can be made about entering into agreements with each community or State, it is imperative that all of the standards, regulations, and siting criteria are in place, and these must be developed sequentially if the government is to avoid criticism of the regulations being changed to fit the site. First, there must be an Environmental Protection Agency standard if one is to be applicable.

Even if the site under consideration is for an independent spent fuel storage installation or monitored retrievable storage facility, the linkages to an eventual repository are sufficiently important to require an understanding of what the applicable regulatory criteria for a repository will be.

Next, the applicable Nuclear Regulatory Commission regulations must be promulgated; these must be risk informed and probability based. This is very important because of a significant potential regulatory dilemma. While a volunteer site must be able to perform an early assessment of its likely suitability, without siting criteria, there is no way to even begin to know what data to collect. This is further complicated by the fact that simple screening criteria have no basis in the risk informed - performance based strategy that forms the basis for current Nuclear Regulatory Commission regulations. While this is especially true for a repository, it is also germane for a storage facility. Examination of 10 CFR Part 72 indicates limited detail pertaining to site screening factors. This is likely due to the fact that a utility considering an independent spent fuel storage installation likely would be locating it on or near the same reactor site. Reactor siting would have been evaluated using the siting criteria of 10 CFR 100 Appendix A⁵⁵; the safety of the independent spent fuel storage installation would likely be assessed using the same criteria and safety arguments.

⁵⁴ 123 Cong Rec. S11643-11650 (daily ed. July 12,1977)

⁵⁵ U.S. Nuclear Regulatory Commission. 10 CFR 100. *Reactor Site Criteria*. Appendix A.

The discussion on *Prioritization of Safety* does not provide insight of its true importance. It fails to note the significance of the safety determination as the fundamental basis for a politically legitimate siting. This is important because the primary purpose of consent-based siting is to establish the political legitimacy of the action. This status only can be fully achieved when a site is acknowledged to be demonstratively safe. Downey, in his paper on the Waste Isolation Pilot Plant, noted that any decision to site a demonstratively unsafe repository, however authoritative that decision may be, is likely to be (politically) illegitimate. He further noted that achieving consensus about the likely safety of a military repository (or any repository) is a necessary prerequisite for its political legitimacy.⁵⁶

For Phase II, in which the implementing organization conducts a preliminary site assessment, there is a need to specify that data that are to be collected by the organization supporting the community and the implementing organization. Again, without, a clear understanding of the regulatory requirements for assessing performance, it is not possible to perform a defensible assessment. Here too, the risk informed - performance based nature of any new Nuclear Regulatory Commission organization will dictate the information needed. It likely will not be simple deterministic criteria lists that characterize this Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste

The Draft Consent-Based Siting Process document does not acknowledge the importance of performing work to an Nuclear Regulatory Commission accepted Quality Assurance Plan. All parties collecting data and performing analyses that have a bearing on an eventual license application need to have approved Quality Assurance Plans.

Additionally, there are several important points that do not seem to be addressed:

- Nowhere in the sequence of events of developing a storage or disposal facility is the issue and acquisition of land acquisition noted.
- Nowhere in the sequence of events of developing a storage or disposal facility is the issue and acquisition of water right or mineral rights noted.
- Nowhere in the sequence of events of developing a storage or disposal facility is the issue of getting permission to conduct site exploration or characterization work noted.
- Nowhere in the sequence of events of developing a storage or disposal facility who will own the land under consideration while it is being investigated and assessed.
- Nowhere in the sequence of events of developing a storage and disposal facility how the site will be protected while it is being considered.
- It should note that since the state is part of the Community, it would facilitate the issuance of all permits and authorities necessary to execute formal and detailed site characterization.
- When the final agreement is signed with the determination by the Implementing Organization and the Community that the site is suitable and it is time to initiate the preparation of the license application, who will own the land and hold the water rights and other mineral rights to the site? If land has to be condemned, at this point the state should acquire the land and water and mineral

⁵⁶ Gary L. Downey, "Politics and Technology in Repository Siting: Military Versus Commercial Nuclear Waste at WIPP 1972–1985." *Technology in Science*. 1985. Vol. 7, p 52.

rights when they decide to request a detailed assessment of the site. The land and water and mineral should be transferred to the federal government when the binding agreement is finalized.

6 Siting Considerations

6.2 Siting Considerations

While it has been pointed out earlier, these criteria reflect items important to the preparation of an Environmental Impact Statement. While this is important, the ability to comply with risk informed - performance based Nuclear Regulatory Commission criteria is more important. Furthermore, if more than one site is to be evaluated, an agreed upon basis for comparative evaluations is required. While an Environmental Impact Statement is a logical place to do a final analysis if multiple sites have been characterized and assessed, an Environmental Impact Statement is of little use at early stages of investigation. That was the role of the 10 CFR 960 in comparing multiple sites identified in the Nuclear Waste Policy Act siting program. In particular, Appendix III and Appendix IV of 10 CFR Part 960 were created guide the application of the siting guidelines at different stages of the site screening process and define the types of information required for the nomination of sites as suitable for site characterization. Unfortunately, the 10 CFR Siting Guidelines were based on the subsystem requirements of 10 CFR Part 60 and therefore do not reflect current Nuclear Regulatory Commission thinking. There for they would need to be redone to address a new repository regulation. As similar problems could face the siting of an independent spent fuel storage installation, screening criteria for such an installation would also be needed.

The words of Dr. Critz George, the Department of Energy official responsible for developing the 10 CFR Part 960 Siting Guidelines are worth considering here:

“I was personally involved in developing the repository siting guidelines, with all the consultation prescribed by the Nuclear Waste Policy Act. In virtually every case, the comments forthcoming from those consultations were blatant attempts to doctor the guidelines so as to exclude their states or communities by whatever means could be contrived. No severe winter weather, no nearby surface water, no underground water, no mountains, no states without nuclear power plants, no tourism, no food industry or farming, no impact on protected lands or scenic vistas, no affected population. The list went on. There was little or no cooperation that could be construed as helpful”⁵⁷

6.5 Site Assessment Considerations

The importance of these criteria can only be judged by their importance to the assessment of performance. This is what the Nuclear Regulatory Commission means by risk informed - performance based strategy; 10 CFR Part 63 was written in a particular way to keep a site from being disqualified by deterministic criteria that had insignificant importance to the demonstration of safety. The list of criteria presented may or may not be relevant to assessing the safety of a spent nuclear fuel or high-level radioactive waste storage or disposal facility.

In essence, this is an argument that there would need to be some simple yet defensible safety assessment modeling capability quite early in the search for acceptable sites. For an independent spent fuel storage installation, it could be source term, population distribution, meteorology, and accident conditions including seismicity. For a repository, it would also have to include geologic conditions and hydrology.

⁵⁷ Quoted in: Michael D. Voegele and Donald L. Vieth. *Waste of a Mountain*. Chapter 1

From: Cooper, Karlie on behalf of Price, Phil [REDACTED]

Sent: Friday, March 4, 2022 11:04 AM

To: Consent Based Siting

CC: Rep. Ladyman - Home; Penzo, Clint; [REDACTED]; [REDACTED]

Subject: [EXTERNAL] Response of the Labor & Environment Subcommittee

Attachments: DOE Response Letter.pdf

Attached is the response letter regarding the use of a consent-based siting process.

Thank you,

Karlie Cooper
Bureau of Legislative Research

[REDACTED]

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Representative Jack Ladyman
Committee Chair



Representative Clint Penzo
Subcommittee Chair

LABOR & ENVIRONMENT SUBCOMMITTEE OF THE
PUBLIC HEALTH, WELFARE, & LABOR COMMITTEES

March 4, 2022

Office of Nuclear Energy
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

RE: Response of the Labor & Environment Subcommittee of the Public Health, Welfare, & Labor Committee - Arkansas General Assembly to DOE's RFI on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Federal Register 68 244 (Dec. 1, 2021)

To Whom it May Concern:

A consent-based siting plan for 'interim used nuclear fuel' has been studied *ad nauseum*. The specific questions included in the information request arguably have been asked and answered before, though little has been accomplished with the answers. This, however, can be rectified.

As authorized by law, a cohort of Arkansas citizens and organizations continue to explore a comprehensive alternative to the limited consent-based 'interim used nuclear fuel' storage siting. The Arkansas plan is modeled on the extensive research and proven results from the Experimental Breeder Reactor-II (EBR-II) and the subsequent Integral Fast Reactor (IFR) programs. In other words, the Arkansas Plan is a comprehensive and manageable solution for the complex problems that the U.S. Department of Energy is tasked to address. Those problems are as follows:

1. Remove fossil fuels from the energy supply chain
2. Comply with the South Carolina plutonium removal agreement by 2037
3. Comply with the Idaho spent nuclear fuel removal agreement by 2035
4. Comply with the Russian agreement to dispose of 34 metric tons of plutonium
5. Rectify the DOE 'Nuclear Waste Policy Act' contract default to accept spent nuclear fuel by 1998
6. Provide a sustainable nuclear fuel supply chain for advanced reactor research and commercial reactor deployment--the HALEU project
7. Provide a spent fuel interim storage facility
8. Provide a permanent nuclear waste disposal facility for fission product

The Arkansas Plan will require intra-governmental cooperation (Federal, State, and Political subdivisions of the State of Arkansas). As time is of the essence, the Arkansas Plan requires answers to the following respectfully submitted questions:

1. Is the U.S. Department of Energy interested in the comprehensive Arkansas Plan?
2. What is necessary and how can the Arkansas team assist the U.S. Department of Energy to consolidate the many discrete DOE programs into a unified program?

Thank you for your consideration and we welcome your questions or comments.

Sincerely,

Jack Ladyman

Representative Jack Ladyman
Public Health, Welfare, and Labor Committee

Clint Penzo

Representative Clint Penzo
Labor & Environment Subcommittee

From: M Langelan
Sent: Friday, February 25, 2022 10:07 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
M Langelan

[REDACTED]

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From: Michel

Sent: Friday, March 4, 2022 1:59 PM

To: Consent Based Siting

Subject: [EXTERNAL] RFI. Consent-Based Siting and Federal Interim Storage. Comments CIECP. Mar 4, 2022

Attachments: RFI. Consent-Based Siting and Federal Interim Storage. Comments CIECP. Mar 4, 2022.pdf

Dear DOE,

Attached are the comments of Council on Intelligent Energy & Conservation Policy (CIECP) and Promoting Health and Sustainable Energy with regard to the referenced RFI

Michel Lee, Esq.

New York

[REDACTED]

[t](#)

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March 4, 2022

Comments of Council on Intelligent Energy & Conservation Policy and Promoting Health and Sustainable Energy in Response to U.S. Department of Energy Request for Information (RFI) Regarding Consent-Based Siting and Federal Interim Storage Facilities Docket DOE-HQ-2021-0032

Office of Spent Fuel and Waste Deposition
Office of Nuclear Energy
U.S. Department of Energy
Via email to: consentbasedsiting@hq.doe.gov

The Council on Intelligent Energy & Conservation Policy (CIECP) and Promoting Health and Sustainable Energy (PHASE) support the responsive comments submitted on behalf of the National Radioactive Waste Coalition (NRWC) and on behalf of the Coalition of Environmental, Environmental and Public Interest Organizations (Beyond Nuclear et al) in Response to the U.S. Department of Energy's (DOE's) Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities. CIECP is also a signatory to said responsive comments.

We write here to add to the above-referenced comments, the following two strong concerns.

The first is DOE's ill-considered rush to dramatically expand a dangerous and extraordinarily toxic regime without full explication to the public – or apparent evaluation by the DOE – of the full cost attendant to the creation of large-scale consolidated interim storage facilities (CISFs).

While the RFI here is characterized as pertaining to Federal sites, the line between national government owned/operated sites and private commercial sites is ill-delineated and effectively irrelevant, since it will be the American people who will be picking up the bill. It is rather astonishing that there has never been a full audit of the costs of nuclear waste already borne by the taxpayer, much less an independent assessment of the full future costs of dealing with this toxic, unbelievably hazardous material. There is no way for consent to be registered for a grand national schema whose cost is hidden from the public. This problem exists vis-à-vis both the nation's nuclear waste inventory in its entirety and with respect to CISFs. Cost estimates must be conducted by entities independent of the DOE and Nuclear Regulatory Commission (NRC). Valid cost estimates, it should be noted, must include all the costs attendant to transportation, safety, security, public health impacts, adequate emergency response capability, and potential cleanup or accident recovery costs.

Honest efforts on the part of the government to obtain "consent" should also always involve the revelation of the fact that neither the commercial nuclear industry nor insurance industry is willing to assume financial liability for either maintaining the nation's nuclear waste or a major radioactive accident.

Our second concern, relates to the DOE's apparent alacrity to promote a dramatic expansion of a dangerous and extraordinarily toxic regime without full explication to the public – or apparent evaluation by the DOE – of the full risks attendant to the creation of large-scale CISFs. A proper analysis necessarily involves a far more multi-disciplinary and disciplined effort than what has been evident so far. The evaluation process must also be as transparent as possible,

with due acknowledgement that the bulk of the associated costs, environmental impacts, public health burden, safety hazards, and national security risks will be borne by the American public.

Integrity demands these risks be clearly stated by a government truly accountable to its populace.

A consent process which does not honestly acknowledge the full range of risks – especially those linked to a transportation regime – is a charade.

A vast array of risk multipliers will interact inextricably and dangerously with the greatly enlarged enterprise being contemplated. These include the risks, vulnerabilities and – most of all – uncertainties linked to the following domains: (1) Cyber and communications. (2) Threats from emerging technologies such as artificial intelligence and unmanned aerial vehicles. (3) Climate change conditions, including large-scale extreme events. (4) Supply chain disruption and vulnerabilities (including counterfeit items and inadequate quality control). (5) The continuing threat of terrorism, including domestic terrorism. (6) The human factor, including actions which may be taken by knowledgeable insiders. (7) The deteriorated state of the nation's infrastructure.

Respectfully submitted,

Michel Lee, Esq.
On behalf of
Council on Intelligent Energy & Conservation Policy
Promoting Health and Sustainable Energy
(New York)

From: Dave Leroy
Sent: Friday, December 3, 2021 2:44 PM
To: Consent Based Siting
Subject: [EXTERNAL] Fw: Consent-Based Siting Request for Information

From: [REDACTED]
Sent: Friday, December 3, 2021 3:40 PM
To: ConsentBasedSiting@public.govdelivery.com <ConsentBasedSiting@public.govdelivery.com>
Subject: Re: Consent-Based Siting Request for Information

GOOD PEOPLE.....I HOPE THAT YOU WILL NOT ATTEMPT TO REINVENT THIS WHEEL FROM SCRATCH, BUT HAVE ALSO CAREFULLY STUDIED THE HISTORY, FILES AND METHODS OF THE OFFICE OF THE UNITED STATES NUCLEAR NEGOTIATOR, WHICH OPERATED FROM 1990 TO 1995 WITH AN IDENTICAL MISSION. REGARDS, DAVE LEROY, BOISE, IDAHO, U. S. NEGOTIATOR 1990-1993

From: U.S. DOE Consent-Based Siting <ConsentBasedSiting@public.govdelivery.com>
Sent: Tuesday, November 30, 2021 12:19 PM
To: Dave Leroy [REDACTED] >
Subject: Consent-Based Siting Request for Information



The U.S. Department of Energy today issued a request for information on using a consent-based siting process to identify sites to consolidate and temporarily store the nation's spent nuclear fuel.

Request for Information

We want to hear from you on:

- the consent-based siting process itself
- removing barriers for meaningful participation, especially for groups and communities who have not historically been well-represented in these conversations
- the role of interim storage as part of the nation's waste management system



Consent-based siting must be done in close collaboration with the public, interested groups, and governments at the Tribal, State, and local levels. This RFI is a first step in that direction. We hope you will consider sharing your feedback with us, as we work to manage the nation's spent nuclear fuel in a way that puts people and communities first.

Please send any questions or your responses to the RFI to consentbasedsiting@hq.doe.gov.

Thank you!

Consent-Based Siting Q&A with Dr. Huff.

Please join us on December 7th, 2021 at 2:00 PM Eastern Time for a Consent-Based Siting Q&A with Dr. Kathryn Huff, Principal Deputy Assistant Secretary for Nuclear Energy.

Register for Webinar



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For more information on consent-based siting, please visit energy.gov/consentbasedsiting.

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From: Leshinskie, Anthony
Sent: Friday, March 4, 2022 11:34 AM
To: Consent Based Siting
CC: Tierney, June; Porter, James; Guzman, Eric; William, Jordan
Subject: [EXTERNAL] Consent-Based Siting Process Comments from the Vermont State Nuclear Engineer
Attachments: 2022-03-04_VT_State_NucEng_Responses_to_2021-12_DOE_Consent-Based_SItng_Questionnaire.pdf

To Whom It May Concern:

The attached comments are submitted in response to the Department of Energy's December 2021 'Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities.' These comments were prepared by the Vermont State Nuclear Engineer on behalf of the State of Vermont and the Vermont Public Service Department. Queries regarding these comments may be directed to the Vermont State Nuclear Engineer via the contact information included below and in the attachment's letterhead.

I thank-you for your consideration. The opportunity to share these comments with the Department is greatly appreciated. I look forward to further interactions with the Department as the Consent-Based Siting Process progresses.

Best regards,

Tony Leshinskie

Anthony R. Leshinskie
State Nuclear Engineer & Decommissioning Coordinator
Vermont Public Service Department

[REDACTED]
[REDACTED]
[REDACTED] [REDACTED]
[REDACTED]
[REDACTED]

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State of Vermont**Vermont State Nuclear Engineer & Decommissioning Coordinator****Department of Public Service**

112 State Street



Montpelier, VT 05620-2601

[tty]: Leave message at (800) 622-4496 via Relay Service

<https://publicservice.vermont.gov/electric/ndcap>

March 4, 2022

US Department of Energy
Office of Nuclear Energy
1000 Independence Ave. SW
Washington DC 20585

Re: Comments on the U.S. Department of Energy 'Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities'

To Whom It May Concern:

Please accept the enclosed comments in response to the Department of Energy's December 2021 'Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities.' These comments were prepared by the Vermont State Nuclear Engineer on behalf of the State of Vermont and the Vermont Public Service Department. Queries regarding these comments may be directed to the Vermont State Nuclear Engineer via the contact information included in this submittal's letterhead.

I thank-you for your consideration. The opportunity to share these comments with the Department is greatly appreciated. I look forward to further interactions with the Department as the Consent-Based Siting Process progresses.

Best regards,

/s/ Tony Leshinskie

Anthony R. Leshinskie
Vermont State Nuclear Engineer and Decommissioning Coordinator

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

Many governmental entities already have programs for considering social equity and environmental justice concerns. The Department of Energy should review as many of these existing programs as practical for elements that should be incorporated into the Department's social equity and environmental justice programs. The response to Area 3, Question 1 contains details on what should be considered.

One key item that needs to be included is that planning meetings for a proposed facility must occur within the potential host communities to assure that these communities can fully participate in the consent and planning processes.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Tribal, State, and local governments must be treated as equal partners to the Department in the consent process. As long as any governmental entity potentially impacted by the placement of a spent fuel storage facility does not give consent to the facility, there will be a significant roadblock to the proposed facility's construction and operation.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

The economic benefits through significant compensation for hosting a storage facility must be emphasized. Besides bringing high-paying jobs to the host community, improvements to supporting local employment must be spelled out (e.g., additional local jobs from the construction of the facility, the maintenance and security of the facility and the added local services to support the facility's high paying jobs). Improvements to local infrastructure need to be enumerated. Besides improved rail lines and roads in the area, support opportunities such as additional heavy haul truck and railroad maintenance facilities, additional area hotels and restaurants, as well as likely new retail outlets should be highlighted. Adding funds for improved local schools, fire and police equipment and other community services will make hosting a storage facility more appealing. See the response to Area 2, Question 5 for more items to consider.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

The biggest obstacle remains overcoming the fear associated with radioactive materials. Perhaps the only way to address this will be a concerted, large-scale effort to better inform the public nationally on how radiation protection is currently done. This will need to include creating a better understanding of

how nuclear fuel is created, transported, used, and protected throughout its lifetime, as well as how future generations can be protected with current technology. The response to questions in Area 2 and 3 provide specific details to consider.

A clear definition of what constitutes community consent needs to be provided. Ideally, this definition will include metrics on how a facility will comply with the given consent, along with what protections or restitutions will be made if the conditions of this consent are violated. The consent definition should also include the conditions under which consent can be withdrawn and how quickly a facility can be closed and decommissioned following withdrawal of consent.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

The Department's interactions with local communities must be a continuous process. There will help to allay concerns that any facility will become an abandoned dumping ground. At a minimum, the Department's offers to host communities should include the community benefits and impacts outlined in the response to Area 2, Question 5 included herein. Additionally, the Department should consider specific benefits (e.g., economic impacts or infrastructure improvements) suggested by potential host communities. While some will be outlandish, others will be reasonable. The Department should accept the reasonable ones and provide detailed explanations on why any rejected expectations or requests were not fulfilled.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

The Department should engage with research institutes frequently available through colleges and universities to support communities trying to understand the technical details in siting, constructing, and operating a spent fuel storage or disposal facility. Many of these institutions also have organizations dedicated to consensus building. These consensus building organizations should be engaged to assure that all stakeholders for a proposed facility are identified and have opportunity to fairly engage in the siting process.

The Department should continue its work through the National Transportation Stakeholders Forum (NTSF) to engage State and Tribal governments in spent fuel disposal issues, and not just issues related to radioactive materials transportation. Local governments and other stakeholders, whether they be identified by State and Tribal governments or through their own interactions with the Department should be invited to participate in NTSF functions, since these provide excellent opportunities for building consensus with other key stakeholders in spent fuel issues.

The Department should also consider engaging more with other nations as they consider their own spent fuel transportation and disposal programs. Finland and Sweden have both successfully sited spent fuel disposal facilities. There are likely lessons learned from these efforts, as well as those in other nations, that can be applied to the DOE's consent-based process.

7. What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

See the responses to the Area 3 questions included herein.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

To limit potential radiological exposure to the general public, any national high-level radioactive waste / spent nuclear fuel repository will likely be located in a remote, sparsely populated area. Such areas typically have meager communications infrastructure: high-speed internet access and cellular phone service is often poor to non-existent; radio communication can be sparse; landline telephone service is frequently antiquated or otherwise unreliable. The residents in such remote areas will comprise the population in the immediate vicinity of a high-level radioactive waste / spent nuclear fuel repository. Public meetings concerning a proposed repository are typically conducted via webcast. A physical meeting location for such a meeting is often located at the convenience of the Federal officials conducting the meeting (e.g., Washington DC or a neighboring, but still somewhat distant, city nominally near the repository site).

The lack of communication infrastructure can result in a neighboring population not even learning about a public meeting regarding a proposed repository until after the meeting has occurred. Attending a public meeting via a webcast is difficult, if not problematic, when their local communications infrastructure is inadequate for full meeting participation (seeing and hearing presentations, along with the ability to speak during public comment periods).

To combat this, accommodations for neighboring population meeting participation must be made. Meeting notifications must assume that the neighboring population does not have high-speed internet access. Meeting notifications must be published at least 2 months in advanced. Local physical meeting spaces must be designated such that the neighboring population can easily attend. If the public meeting itself will be conducted via webcast, the local meeting space must have high-speed internet access to assure that the neighboring population can fully participate. Audio / video recordings of the meetings must be made. Post-meeting question and answer opportunities via mail should be considered to accommodate those unable to attend in-person or via webcast.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

Proposals and related project documentation must be available to the interested communities well in advanced (e.g., at least 2 to 3 months) of any public meetings concerning a proposed high-level radioactive waste / spent nuclear fuel repository. Local government offices or public libraries are suggested for housing this documentation.

The largest public meeting spaces in the vicinity of a proposed repository should be used for public meetings related to the proposed facility to assure that all interested members of the interested community can participate. If necessary, transportation to and from the public meetings should be provided at Department of Energy expense.

High-speed internet access must be available at the interested community's public meeting space to assure full participation in relevant meetings conducted via webcast. All public meetings should be recorded for later review.

Federal funding must be made available to assure that interested communities can hire independent expert assistance in any nuclear waste repository selection process.

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

The Department should look to the "road show" programs that have been developed by some of the regional radioactive waste transportation task forces to educate local authorities and emergency response organizations regarding the packaging and procedures used to transport large volumes of low-level radioactive waste to established disposal facilities. These existing programs have been very successful in teaching local authorities and emergency response organizations that radioactive waste transportation is done routinely with the utmost safety. Lessons learned from developing and presenting these programs can guide the development of educational programs for interim or permanent spent fuel storage facilities.

Additionally, there are likely lessons to be learned from the Department's current outreach to Decommissioning Facility Citizen Engagement Panels as part of the present Consent-Based Siting Request for Information to improve mutual learning and engagement.

Any improved opportunities for mutual learning and collaboration must include outreach in the potential host communities themselves. The most likely host communities frequently lack communications infrastructure that allow them to readily participate in meetings conducted primarily by webcast or those where any physical meeting location is extremely far away (e.g., DOE headquarters in Washington DC or a regional office several states away). The Department's outreach must include well-publicized meetings within the potential host communities themselves.

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

As noted in the response for Question 3 of Area 2 (immediately above), more effective engagement needs to build on existing programs used to educate Local, State and Tribal Governments about radioactive waste transportation through their jurisdictions. Expanding the “transportation education” programs to a wider audience of stakeholders could be used as a starting point for identifying communities interested in hosting a consolidated spent fuel storage facility. A significant element of this expanded engagement needs to be public meetings held in the potential host communities rather than meetings held solely online or at a distant Departmental or other Federal agency office.

Consolidating the Department’s engagement to a single sub-office within the Office of Nuclear Energy may be helpful. Currently, portions of the Department’s spent fuel management programs are divided up between two primary Deputy Assistant Secretary’s jurisdictions (Spent Fuel / Waste Disposition and Nuclear Fuel Cycle / Supply Chain, with at least one more holding at several significant responsibilities (Infrastructure). It is sometimes difficult to determine which sub-office is the best point of contact for a specific spent nuclear fuel issue. The NRC’s State Liaison Officers Program could serve as a potential point of contact model.

Funding needs to be available to potential host communities that would allow them to hire their own experts to independently assess information provided by the Department on the benefits of hosting a spent nuclear fuel storage facility. Independent verification of the benefits will improve confidence in the Department’s outreach.

With regards to Tribal governments, the Department must simplify its qualifications for recognizing Tribal governments as equal partners to State Governments in regional radioactive waste transportation and disposal efforts. For example, in the Northeast Regional High-Level Radioactive Waste Transportation Task Force, there are currently only two Tribal governments that have successfully completed the several year-long qualification program to participate in Task Force activities: the Seneca Indian Nation (from western New York State) and the Mashpee Wampanoag Tribe (from eastern Massachusetts). Other large, federally recognized Tribal governments such as the Mashantucket Pequot and the Mohegan tribes (of eastern Connecticut) have not qualified for Task Force participation even though both are situated near nuclear industry facilities. Expanding participation to State-recognized Tribal groups such as the Elnu Abenaki of Vermont would also improve the Department’s outreach.

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

A short list includes:

- i. Economic benefits to hosting a storage facility – there should be base scope of benefits such as improved local employment, community compensation and enhanced local infrastructure offered. Specific benefits suggested by potential host communities should be considered too.
- ii. Facility monitoring and safety programs – the programs to assure public health and facility safety must be known (recognizing that security plan details will be on a “need-to-know” basis). The results from radiological and environmental monitoring for the site must be publicly available and understood. Incident response capabilities and clear lines of communication in the event of an emergency must be known.
- iii. Potential Risks to the Community must be identified. Plans to mitigate these risks must be well-formulated and well-understood. Answers to controversies surrounding such facilities must include specific details rather than nebulous “a plan will be in place” answers.
- iv. For interim facilities, a specific plan to remove the spent fuel at the end of the facility’s lifetime must be in place before the facility begins operations (e.g., the subsequent storage site must already be known, whether that is a permanent deep geological repository or a second interim facility (such as a suitable national laboratory) . Alternative temporary storage at an existing facility such as WIPP or Oak Ridge National Laboratory in the event of a problem at the interim facility would be helpful.

Area 3: Interim Storage as Part of a Waste Management System**1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?**

Many governmental entities already have programs for considering social equity and environmental justice concerns. The Department of Energy should review as many of these programs as practical for elements that could be incorporated into the Department’s social equity and environmental justice aspects of the Consent-Based Siting Program. Evaluating existing social equity and environmental justice programs will likely require an effort independent of the Department’s current Consent-Based Siting Program. A “continuous improvement” program seeks lessons learned from the existing programs may work best for the Department’s evaluation program.

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

The advantages to locating a spent fuel repository in the vicinity of other waste management system, nuclear fuel cycle or related research and development facilities include:

Vermont State Nuclear Engineer

- i. Co-located facilities will mean that a larger percentage of the local population will be familiar with current nuclear material handling and storage technologies. There will likely be less fear regarding “living with” spent nuclear fuel in such areas, since nuclear fuel and radioactive materials play a role in the work lives of the local population. The local population is more likely to understand the required packaging, transportation, storage, and emergency response capabilities necessary for hosting a storage facility. Locating a facility in such a community is more likely to be regarded as a means of increased job security in communities where there is a higher percentage of radioactive material handling workers.
- ii. The co-located facilities will likely have a larger local employment pool from which to draw experienced radioactive material handling workers.
- iii. Any local research facilities investigating potential applications for spent nuclear fuel would be near inventories that could be used in conducting such research. In particular, research into spent fuel reprocessing would likely benefit from having a spent fuel storage facility in proximity to a fuel enrichment or fuel fabrication facility (as is potentially the case for facilities situated in the Southwest United States). Having spent fuel storage local to a fuel enrichment or fabrication facility would simplify the logistics for reprocessing spent fuel at a fuel enrichment or fabrication facility.
- iv. Situating an interim spent fuel storage facility in proximity to a permanent, deep geological disposal facility would simplify the transportation logistics and limit the added risk associated with moving spent fuel twice, two concerns that are often raised by those opposing Consolidated Interim Spent Fuel Storage Facilities.

The disadvantages to locating a spent fuel repository in the vicinity of other waste management system, nuclear fuel cycle or related research and development facilities include:

- i. Opponents to these facilities can argue that these areas are unduly burdened by radioactive material disposal and nuclear fuel cycle facilities, particularly if there is not a nuclear power plant (which provides a power-generating benefit) in the immediate vicinity of these facilities. Recently, facility opponents have begun using the term “sacrifice zone” to describe such areas, which implies that the areas are deliberately being damaged.
- ii. Co-located facilities a potentially a high-value target for any hostile group intent on damaging critical US infrastructure. If damage to one facility limits access to surrounding facilities, the hostile group has essentially damaged multiple facilities.
- iii. Natural disasters or hostile actions against co-located facilities will likely put a greater strain on local first-responders should multiple facilities require a concurrent response or several responses in rapid succession. Co-located facilities will require an integrated emergency response plan to assure that all facilities have adequate first-responder coverage either concurrently or in a sequential rapid succession.

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

Development of permanent and interim storage facilities are inseparable. It is unlikely that any local community will consent to hosting an interim site when progress toward a permanent disposal site is absent. The concern will be that the interim sites will become permanent. Measurable progress in developing a permanent disposal facility or an alternate large-scale solution to the national high level radioactive waste problem will be necessary to attract potential host communities for any repository.

4. What other issues should the Department consider in developing a waste management system?

DOE needs to assure that State, Tribal and local officials along the transportation routes are properly notified of spent nuclear fuel / high level nuclear waste moving through their jurisdictions. The Department must always know the location of its waste shipments. This information needs to be available to the State, Local and Tribal authorities along the transportation routes and must be available to local emergency response agencies while the shipments are within their jurisdictions. This will assure first-responder availability and adequate local emergency response in the event of any incident with the shipment. Adequate emergency response training and equipment must be available to the jurisdictions and first responders along the transportation routes.

While many of these requirements are already being addressed through current radioactive waste transportation planning efforts, these requirements are noted here to emphasize that they must be more widely known. Providing the training for radwaste transportation through a jurisdiction could be used as a first step to educate a community into volunteering to host a consolidated or permanent spent nuclear fuel storage facility.

From: Chris Lish

Sent: Thursday, March 3, 2022 7:20 AM

To: Consent Based Siting

Subject: [EXTERNAL] Do NOT Use Coercion in Nuclear Waste Dump Siting -- Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities

Thursday, March 3, 2022

Office of Nuclear Energy
1000 Independence Ave. SW
Washington DC 20585

Subject: Do NOT Use Coercion in Nuclear Waste Dump Siting -- Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities

Dear Secretary of Energy Jennifer Granholm and Acting Assistant Secretary for Nuclear Energy,

The Department of Energy (DOE) must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of “consent.” Please prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

“It is horrifying that we have to fight our own government to save the environment.”
-- Ansel Adams

Here are my recommendations

1. **Stop making nuclear waste** — Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. The DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. **Stop lying** — Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste the DOE is seeking to site won't be moving away in the foreseeable future. The sites the DOE is seeking are unlikely to be “temporary” or “interim” as claimed because it has no plans for a long-term repository or management program.
3. **Don't try to bribe people** — Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. **Do your job** — Review and respond to what the public told the DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, the DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. **Respect the will of the people** — Don't gang up on communities with concerns by “partnering” with businesses and corrupt officials to strong-arm people into “consent”.
6. **Protect people where nuclear waste is stored now** — Use any resources allotted for “interim” or “temporary” storage to improve the storage of nuclear waste at and near where it is located. This

avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.

7. Respect non-consent — No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

*"The ultimate test of a moral society is the kind of world that it leaves to its children."
-- Dietrich Bonhoeffer*

Thank you for your consideration of my comments. Please do NOT add my name to your mailing list. I will learn about future developments on this issue from other sources.

Sincerely,
Christopher Lish

[REDACTED]

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

From: Joan Lobell <[REDACTED]>
Sent: Friday, March 4, 2022 4:37 AM
To: Consent Based Siting <consentbasedsiting@hq.doe.gov>
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

If it must be put somewhere, let it be near the homes of those who have profited the most from it, the executives of the nuclear industry and Congressmembers who supported it (most likely for "campaign contributions").

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through

poorer and marginalized communities that would violate environmental justice.

7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Those who have forced nuclear power onto us should be the only ones who have the responsibility to accept nuclear waste where they live.

Sincerely,
Joan Lobell

[REDACTED]
[REDACTED]

From: Christopher L
Sent: Thursday, March 3, 2022 6:46 PM
To: Consent Based Siting
Subject: [EXTERNAL] Eleventh hour comment
Attachments: DoE consent-based siting.pdf

Greetings, DoDers!

Please find a two-page attachement which addresses your call for comments on interim storage of nuclear waste.

Thank you for requesting comments from the public.

I hope you'll read em.

Sincerely,
Christopher Logan

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Greetings, Energy Department officials!

You have requested public comments about “consent-based siting” of highly radioactive nuclear waste in New Mexico and Texas, on an “interim” basis.

First, let’s examine whose consent is important. Stakeholders include all who may be affected by a decision. As such, it will not do, to restrict comment to a tiny geographical area. While it’s possible that a majority of a small town might feel it was in their own interest to invite nuclear waste to “their community”, a moment’s reflection will remind the decision maker that nuclear materials affect people far from a nuclear incident, when an incident occurs. So “the community” affected by Fukushima or Chernobyl is huge, crossing several national borders.

All those, who might be affected by a mishap, are part of the nuclear “community”. A county in Texas or New Mexico is not sufficiently large to exclude other stakeholders. “We’re all downwinders.”

Therefore, the consent you must seek is of *all* the people potentially affected by “interim storage” in New Mexico and Texas. And I will take this opportunity, as a stakeholder, to discharge some wisdom on nuclear energy, stuff with which you DoD folks should be intimately familiar. Really, you know these truths better than I, and should act on them.

First of all, nuclear waste is the worst poison in the world, and there are already a quarter million tons of radiation-intense fuel rods around the world, which cannot be contained effectively for the necessarily long period they are inimical to human (and other) Life. So the initial action we should take on nuclear waste, is to *produce no more of it*, until we know how to protect the human race from its ravages.

Cement cans rated at a hundred years are being complacently used to contain waste that will be inimical to human Life for thousands of years. What happens after the cans begin to disintegrate? Will a civilization have sufficient economic and scientific resources to recask the waste for another century? And will that predictably occur every century for longer than human civilization has been around? Cutting the waste loose in a patch of desert is not a solution.

Can a permanent storage site be found? Yucca Mountain was apparently not able to contain all the radiation, and we don’t have another site that even *might* work. If a permanent storage site, that is adequate for the long term, cannot be found, how can even think about producing more nuclear waste? **By relieving the energy producers of their custodial duties, you are encouraging the proliferation of this technology.** If the waste can “disappear”, then more nuke plants can confidently produce more waste, which will not be their problem.

Nuclear waste should be *the problem of those who produced it*, and who profited on it. Full cost accounting requires that all consequences of an action be paid for by those who do the action. Instead, you are letting energy companies produce unlimited nuclear

waste, and just chucking it down into the desert, where nobody has to think about it. If it were scrap iron, that would be merely a dumb idea, but since it's highly poisonous and highly radioactive waste, laying it out on the desert is a recipe for disaster.

Decayed canisters are likely to be infiltrated by rainwater and wind, both of which tend to move dust outward from the storage location. Today, floods seem unlikely in the area, but the Sahara was once forested, and global warming is changing weather around the world.

As wind, water, possibly human or animal action, work on the waste, it will spread.

The nearby Ogallala Aquifer may be affected. The Gulf of Mexico. Monterey, Mexico. Winds could carry trails of radioactive dust as far as Los Angeles or St. Louis or even New York, which experienced Oregon's forest fire smoke last year.

The plan, on which you're hoping to gain consent, is no plan at all.

How can anyone *not* object to throwing the world's most dangerous substance, dangerous for thousands of years, onto a patch of vacant desert, and walking away? That is not a plan. **It's just a desperate move to avoid the lawsuits that are piling up.** The DoD has to get rid of these lawsuits, so instead of doing serious science to find a solution, it just comes up with this bone-headed idea, to treat nuclear waste like old bathtubs and cars, walk away and forget it. This allows the much-hoped-for "nuclear renaissance" to occur, because companies now do not have to figure custody of radwaste into their business overhead, creating a much more desirable investment opportunity.

It's true, that the SMR offers a hope of energy produced without fossil fuels. But there is another way to reduce our fossil use, without going nuclear: **use less energy.** Oh, my. Did I say something wrong? Do we need nuclear power to keep those Santa dolls lit up on American lawns, mine Bitcoin and advertise in mammoth neon over every city? Or do we need it as a convenience for Elon Musk's fleet of 200 million electric cars? Does anybody question why we *have* to revolve around auto traffic?

Could we change the way we live, if it meant saving the human race?

Recently in Iraq, depleted uranium shells were cited as the cause of a huge spike in birth defects. Headless babies, one-eyed babies and other misshapen kids were born soon after the use of depleted uranium. Thyroid cancer in Europe, after Chernobyl, extended to hundreds of thousands in many countries. We know that nuclear materials are horribly dangerous for human DNA, and a nuclear renaissance featuring SMRs would plant nuclear waste in previously inaccessible regions, such as the Amazon and Arctic, from which it would likely never be extracted, companies tending to leave projects behind when they become unprofitable.

This massive proliferation of nuclear waste will be largely a result of your decision to "temporarily" site America's nuclear waste in the desert, if that is the decision you make. As a stakeholder on this issue, I urge you to scrub your plans for "interim storage" and look very seriously on how to *permanently* separate nuclear waste from human DNA.

Christopher Logan – [REDACTED]

From: Margaret Loomis
Sent: Friday, February 25, 2022 12:01 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Margaret Loomis

[REDACTED]

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From: Joel Lorimer
Sent: Tuesday, March 1, 2022 4:22 PM
To: Consent Based Siting
Subject: [EXTERNAL]

Please leave the waste at its current locations until a safe, permanent solution is found. Avoiding moving the extremely hazardous waste should be a top priority.

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From: Kelly Lundeen
Sent: Monday, February 28, 2022 12:10 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

Kelly Lundeen
Nukewatch



Area 1: 1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

The first thing you need to do is take the Holtec /Eddy Lea site proposal in New Mexico and the ISP proposal in Texas off the table immediately because there has been little to no consent-based process up until now. Consent starts at the beginning, before licensing. During every step of the licensing processes the communities and nationwide coalitions have opposed these sites. Both of these sites are obvious sites of environmental injustice as seen in their ethnic, racial and economic makeup.

Area 3: 3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

If you look at the current US federal law - the Nuclear Waste Policy Act clearly states that establishing a permanent repository is a precursor to the US DOE taking title to the nuclear-industry produced radioactive waste. All you have to do is follow the law, which already answers your question.

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From: Casey Lyons (It/They)
Sent: Saturday, January 29, 2022 6:48 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

Hello Department of Energy staff,

My name is Cassandra Lyons, and I'm writing along with other members of Beyond Nuclear to comment on your proposed consent based siting process for interim storage of nuclear waste. My address is [REDACTED]. My phone number is [REDACTED]. My email address is [REDACTED].

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

Social equity and environmental justice should be a top priority for consent-based siting of federal, so-called “consolidated interim storage facilities” (CISFs). It is Orwellian to float the offer of jobs, infrastructure development, and potential funding to low-income communities, communities of color, and such communities already disproportionately impacted by hazardous facilities, and portray it as a social equity and environmental justice advancement. BIPOC, low-income, and already heavily polluted communities should not be further disproportionately impacted with CISFs for one of the most hazardous substances ever generated by human society, highly radioactive irradiated nuclear fuel.

As Keith Lewis, environmental director for the Serpent River (Ojibwe) First Nation near Elliot Lake, Ontario, Canada, is quoted as saying in *This Is My Homeland: Stories of the Effects of Nuclear Industries by People of the Serpent River First Nation and the North Shore of Lake Huron* (edited by Keith Lewis, Lorraine Rekmans, and Anabel Dwyer; published by Serpent River First Nation, 1998 & 2003) — “There is nothing moral about bribing a starving man with money.” He was speaking about the devastation done to his First Nation, and its homeland, by the offer of hazardous uranium mining and milling jobs beginning in 1948, and ending altogether by 1996. The jobs are long since gone, but the devastation goes on.

DOE itself has a most shameful tradition of targeting Native American reservations for CISFs. See the 2005 NIRS/Public Citizen factsheet, “Radioactive Racism.” This is similar to what my home, Kentucky, experienced with coal mining. Enticed by jobs, we participated in the destruction of our own home and the bodies of the miners themselves. Coal companies came to extract everything they could from us and then abandon us. They weren't here to give us jobs; in fact, they treated our ancestors so badly that some of them took up arms to defend themselves from their own employers. They're still chopping the tips off mountains, and still refusing to take any responsibility for the destruction they've wrought, including the black lung disease many miners or former miners are still suffering.

This shameful history cannot be repeated now or in the future. There is also a pattern of federal CISF schemes turning into private CISF schemes, such as the Private Fuel Storage, LLC CISF, targeted at the Skull Valley Goshutes Indian Reservation in Utah. Currently, private CISFs targeting New Mexico and Texas could effectively become federalized, if DOE pays all costs, including a hefty profit margin to the private owners. However, such an arrangement is illegal. The Nuclear Waste Policy Act of 1982, as Amended, prohibits DOE from taking title to/ownership of commercial irradiated nuclear fuel at a private CISF, unless and until a permanent repository is licensed and operating. Significantly, New Mexico is a majority minority (Latinx, Indigenous) state, with widespread poverty issues. It is also disproportionately impacted by nuclear and fossil fuel industrial pollution, and other hazardous industries. Such disproportionate impacts are especially acute at the Holtec, NM and Interim Storage Partners, TX CISF sites (the latter just 0.37 miles from the NM state line, and upstream). These disproportionate impacts are compounded by the two CISFs, proposed to “temporarily

store” a grand total of 173,600 metric tons of commercial irradiated nuclear fuel and highly radioactive waste (almost twice the amount that currently exists in the U.S.), being located just 40-some miles apart. These proposed CISFs are an attempt to turn the TX/NM borderlands into a high-level radioactive dump sacrifice area. See Beyond Nuclear’s series of eight fact sheets, expressing opposition to the TX and NM CISF schemes, including to DOE’s illegal potential key involvement in them: < <http://archive.beyondnuclear.org/centralized-storage/2021/9/11/new-beyond-nuclear-fact-sheets-opposing-consolidated-interim.html> >

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Tribal, State, and Local governments should have free, and fully-informed, consent-based siting rights, including an absolute veto against a federal CISF. That is, Tribal, State, and Local governments should have fully-informed, absolute, binding, and final rights to non-consent. Any DOE, or private, scheme to construct and operate a CISF must cease and desist immediately, once Tribal, State, and/or Local government “hosts” express their non-consent. In addition, consent-based siting rights should extend directly to the citizens/residents of the tribal reservation, state, and/or locality. Free, and fully-informed, consent-based siting rights should extend to citizens/residents, who should also have absolute and final veto rights to block CISFs.

For example, the Saugeen Ojibwe Nation in Ontario, by an 86% to 14% tribal referendum vote in January 2020, blocked the construction and operation of a permanent repository for all of Ontario’s so-called “low-,” and highly radioactive intermediate-, level radioactive wastes. Free, and fully-informed, consent rights to consent, or not consent, should be extended as widely as possible, including to the public, not just to elected or appointed government leaders. And such free, fully-informed consent, with absolute and final state veto power, should also extend to permanent repositories, not just CISFs, as the Nevada U.S. congressional delegation has asserted for the past several years, with its re-introduction each congressional session of the Nuclear Waste Informed Consent Act.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

As mentioned above, the idea that jobs, infrastructure development, and/or potential funding, associated with the construction and operation of a CISF, is not compatible with environmental justice and social equity, when the CISF is targeted at BIPOC and/or low-income communities, already heavily polluted by nuclear and/or other hazardous industries. Thus, DOE should cease and desist from targeting BIPOC, low-income, and/or already heavily polluted communities for

CISFs. Instead, the benefits and opportunities that DOE should be extending to Local, State, and/or Tribal governments, in line with environmental justice and social equity, should be renewable energy and energy efficiency in nature. DOE should shift resources from the dead end that is promotion of the nuclear power industry and its dirty, dangerous, and expensive agenda, and instead promote renewables, such as wind and solar power, as well as energy efficiency.

In 2012, at a hearing of the U.S. Senate Energy and Natural Resources Committee, focused on legislation to implement the Blue Ribbon Commission on America’s Nuclear Future’s (BRC) recently released Final Report (published in Jan. 2012), U.S. Senator Risch (R-ID) made a cynical joke. He said that “consent-based siting,” recommended by the BRC, really meant financial incentives. Sen. Risch’s cynical remark was very telling revealing, and objectionable. DOE’s “consent-based siting” cannot be a thinly veiled Public Relations ploy to “get to yes” on CISFs. Legalized bribery is unacceptable, and in this case an EJ violation. As Keith Lewis of Serpent River First Nation was quoted above, “There is nothing moral about bribing a starving man with money.” It would fly in the face of the Biden administration’s own rhetoric about prioritization of EJ principles, rhetoric that Energy Secretary Granholm and Principal Deputy Assistant Secretary Huff have themselves invoked.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

As DOE Office of Nuclear Energy's own Blue Ribbon Commission on America's Nuclear Future (BRC) recommended in its Final Report in January 2012, DOE should no longer be in charge of irradiated nuclear fuel and highly radioactive waste management. A major reason for the public's irreparable loss of trust in DOE is its incompetence, or worse, at managing irradiated nuclear fuel and highly radioactive waste over decades past. Hence DOE must be replaced. This recommendation was as much of an overarching priority as the need for "consent-based siting" itself. This of course represents a major barrier and impediment to DOE's attempt to site federal CISFs, even supposedly using a "consent-based" process. DOE should not be advancing this Request for Information and public comment proceeding. Any such initiatives should be left to the replacement agency, organization, or body, advocated by BRC a decade ago. Why is DOE driving this train, when its very own BRC strongly recommended DOE be replaced?

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

As an important part of fully-informed consent-based siting of CISFs, DOE should clearly admit to potential host communities that so-called "interim storage" facilities could easily become de facto permanent surface storage, de facto permanent surface disposal, or parking lot dumps. Given that highly radioactive wastes, such as irradiated nuclear fuel, remain hazardous for at least a million years (as acknowledged by the U.S. Environmental Protection Agency, in its court-ordered rewrite of its Yucca Mountain regulations, published in 2008), containers and facilities will degrade and fail, unless regularly replaced. The U.S. Nuclear Regulatory Commission assumed, in its 2014 Generic Environmental Impact Statement on Continued Storage of Spent Nuclear Fuel (previously called the Nuclear Waste Confidence Rule), that CISFs, once constructed and operating, would be replaced in their entirety, once every hundred years. So communities targeted by DOE for federal CISFs must be fully informed that the high risks of highly radioactive wastes will persist for at least a million years, and that unless the CISFs are replaced once per century in their entirety, those radioactive hazards would be unleashed into the local environment, to blow with the wind, flow with the water, and cause harm, downwind, downstream, up the food chain, and down countless generations into the future.

In a previous DOE RFI regarding CISFs, none other than Holtec International itself advised DOE that "interim" has to be assumed to last at least 300 years. Per the NRC immediately above, that would mean at least three complete replacements of the entire CISF, to stave off age-related degradation container failure. Where would the funding come from to do so? Neither NRC nor DOE have answered that question. What would the consequences be if such replacements did not take place, such as due to lack of funding, or loss of institutional control? NRC Chairman Macfarlane penned a warning, when NRC approved its Continued Storage of Spent Nuclear Fuel GEIS (formerly called Nuclear Waste Confidence Rule, but more truthfully dubbed a Nuke Waste Con Game), that institutional control will, by definition, someday be lost. Once that happens, what will be the consequences at CISFs? These questions and concerns, and many others regarding the high risks of CISFs, must be communicated clearly to potential "host" communities, so they know what they are getting into. If this does not happen, fully-informed consent would be violated.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

As provided for in the Nuclear Waste Policy Act of 1982, as Amended, regarding permanent repositories, the DOE should also provide funding to states, Native American tribal

governments, and Affected Units of Local Government, being targeted for federal CISFs. Such funding is essential for attaining fully-informed consent, including for the hiring of independent experts, and the performance of independent technical, sociological, and other research. In addition, such funding support from DOE should be extended to Non-Governmental Organizations (NGOs), which are almost always expected to take part in U.S. federal licensing and/or public comment proceedings, such as this one, with no federal funding support whatsoever. This practice is itself a violation of environmental justice and social equity, as environmental and environmental justice organizations, which often operate on very low budgets, or with no funding at all, have been expected to self-fund, or else simply volunteer with no funding support, throughout highly complex and very lengthy federal proceedings. Such past abuse cannot be repeated in the present or future, not without violating fully-informed and free consent-based siting principles.

7. What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)) [sic, please note that this is a broken link, despite its inclusion in the Federal Register Notice] should the Department consider in implementing a consent-based siting process?

Opponents to federal and/or private CISFs have likely submitted more than 100,000 public comments opposed to CISFs over past years and decades. This has included public comments submitted to: NRC in the Private Fuel Storage, LLC (targeted at the Skull Valley Goshutes Indian Reservation in Utah) CISF environmental review public comment proceedings, in the late 1990s/early 2000s); the DOE Office of Nuclear Energy's own Blue Ribbon Commission on America's Nuclear Future (2010-2012); the U.S. Senate Energy and Natural Resources Committee chairman Ron Wyden (Democrat-Oregon) a decade ago, when the ENR Committee requested public comment during the development of legislation to implement the BRC's recommendations; DOE's own previous "Consent-Based Siting" public comment proceeding (2015-2017); and the current round of CISF targeting (Interim Storage Partners in Texas, Holtec in New Mexico) NRC environmental review public comment proceedings (2017-2021); and other related public comment proceedings. DOE should compile, publish, review, consider, and respond in writing, to all these previous 100,000+ public comments, opposed to CISFs, whether privately owned, or federally implemented. As those 100,000+ comments have made clear not for years, but for decades, large numbers of Americans rightfully regard CISFs as a non-sensical non-starter. Highly radioactive wastes and irradiated nuclear fuel should only be shipped once, from the nuclear power plant sites and DOE facilities where they are currently stored, to a technically suitable, socially acceptable permanent geologic repository. (See Beyond Nuclear's "Stringent Criteria for a Highly Radioactive Waste Geologic Repository.") CISFs, by definition, guarantee that serious transport risks will be multiplied, for no good reason whatsoever, as irradiated nuclear fuel and highly radioactive waste crosses the country from reactor sites and DOE facilities, to CISFs, only to have to be shipped again someday (or some decade, or century) to a permanent repository. The permanent repository could be located right back in the same direction from which the irradiated nuclear fuel came in the first place, further revealing the absolute folly of CISFs. If CISFs are merely intended to expedite the transfer of title and liability for commercial irradiated nuclear fuel, from industry onto DOE (that is, federal taxpayers), this is entirely unacceptable. As federal policy, law, and regulation have long established, and as courts have ruled, interim storage is the private owners' responsibility, while permanent disposal is the federal government's (that is, DOE's or its replacement entity, per the BRC recommendation — that is, federal taxpayers') responsibility. This latter policy already represents an unprecedented, unique in all of industry, very large-scale subsidy to a private industry. The nuclear power industry should not be allowed to foist interim storage costs, risks, and liability onto DOE (that is, taxpayers) as well. This would be a radical departure from past federal policy, law, regulation, and court ruling precedent. Besides, DOE, as well as NRC, the nuclear power industry, and its proponents, stubbornly refuse to acknowledge much or any risk associated with on-site storage of irradiated nuclear fuel and highly radioactive waste, whether stored in wet indoor pools, or outdoor dry cask storage, whether at operating nuclear power plants, permanently closed atomic reactors, DOE complex sites, or elsewhere. If such on-site storage is so safe and secure, as DOE, NRC, and the nuclear power industry assert,

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then why ship the wastes to CISFs? Why take the unnecessary transport risks? Why expose virgin away-from-reactor sites to the very high risks of CISFs, if current on-site storage is so safe and secure? DOE, NRC, and the nuclear power industry are speaking out both sides of their mouth, in their advocacy for unneeded, unhelpful CISFs. CISFs actually multiply the risks unnecessarily, unhelpfully, and should be rejected.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

As mentioned above, low-income communities, communities of color, and others already disproportionately polluted, should not even be targeted for CISFs in the first place. It would be an environmental justice violation, on its face. But DOE could and should support BIPOC and/or low-income communities, especially those already shouldering disproportionately high hazardous industry burdens, in consent-based siting of safe, clean, renewable energy and energy efficiency economic development. This would comport with the Biden administration's stated EJ principles. Importantly, Latinx communities often have a large percentage of residents for whom Spanish is their primary or only language. Such is the case in the region surrounding the privately owned CISFs targeting the Permian Basin in New Mexico and Texas currently. Along one stretch of railway (El Paso to Monahans in West Texas) that would carry high-level radioactive wastes to one or both of these CISFs if they are constructed and operated, the Latinx population represents 92% of the overall population, and 49% of the population does not speak English well. (For more detailed information, see: <http://static1.1.sqspcdn.com/static/f/356082/28466350/1631389405890/CISF+Dangers+and+Holtec+and+ISP+sites-3.pdf?token=TdODAT3hqzGDDH887ttAaoVjjJQ%3D>) Thus, for DOE to communicate meaningfully with such populations, all written and verbal communications must not only appear in English, but also Spanish. Similarly, numerous Indigenous Nations have been and still are targeted for CISFs, whether privately-owned or federal. Again, all communications must be translated into all local Indigenous languages. This is especially important given the leadership role of elders in traditional Indigenous Nations; many elders speak their Native language, with English (and/or Spanish) a distant second, if at all.

Along similar lines, DOE must always be conscious of digital divides. Given the disproportionately high poverty rates, rural locales, and other socio-economic challenges faced by many low-income communities and communities of color, including those already beset by disproportionate hazardous pollution burdens, many citizens and residents that would be most impacted by CISFs, do not have ready internet, nor cell phone, access. Despite this, especially in this era of pandemic, most to all federal government proceedings (including this one, DOE's RFI re: CIS "Consent-Based Siting,") are mostly to entirely internet-based. New Mexico, currently targeted by a private CISF (Holtec), with very likely DOE involvement (albeit illegal), and previously targeted by DOE for a federal CISF (at the Mescalero Apache Reservation, which was then later targeted by a private CISF, Private Fuel Storage, LLC), is a case in point. The majority minority (Latinx, Indigenous) State of New Mexico faces many socio-economic challenges, in addition to its disproportionate nuclear, fossil fuel, and other hazardous industry pollution levels. Among these is the current lack of access, by many New Mexico citizens and residents, to the internet, and reliable telephonic connections. Thus, if DOE proposes to undertake consent-based siting interactions in such places, the agency must be prepared to rectify such digital divides. If not, any claim of "consent-based siting" rings hollow and empty, a merely meaningless check the box PR exercise.

Last but not least, the hearing and visually impaired, or person with other physical challenges, must have full access to all communications, just like everyone else in society. Not only does the Americans with Disabilities Act require this by law of federal agencies like DOE, but it is the right thing to do. Numerous persons with hearing impairments spoke out at an NRC DEIS public comment meeting re: CISF applications in the recent past, objecting to the illegal, high hurdles they faced in simply taking part.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

In addition to our answer to the question immediately above, as we also mentioned further above, DOE must provide adequate funding for community involvement, especially in communities of color and/or low-income communities, particularly those already heavily burdened by hazardous industry and pollution. Such funding is needed for these communities to educate themselves, as well as to hire experts, communicate with their neighbors, and otherwise meaningfully take part in a very high stakes (life and death stakes, forevermore) proceeding initiated by a federal executive agency with a budget in the tens of billions of dollars per year (provided by taxpaying Americans, by the way, including hardworking ones in these very same targeted communities), initiated — truth be told — on behalf of the nuclear power industry, itself a trillion dollar, extraordinarily heavily publicly subsidized special interest in this country. Such funding support should be extended by DOE to NGOs, including environmental and environmental justice and social equity NGOs, to enable them also to participate meaningfully in the proceedings. After all, DOE's counterpart agencies, as in Canada and Scandinavia, do this. But in the U.S., low income, to no budget, grassroots environmental, EJ, and social justice organizations have been expected to pay all the freight for their own involvement in such proceedings, or to simply take part in an entirely unfunded, completely volunteer way. This is not right nor just, and certainly violates any fair concept of "consent-based siting," at least in regards to the "host" community's civic sector/civil society, a vital element of the American experience, from the very beginning of our great experiment with democracy.

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

Renewable energy and energy efficiency are the future, if we are to have a future, in our climate-constrained world. Nuclear power is way too slow, and way too expensive, to help address the climate crisis in any meaningful way. In fact, money wasted on glacially slow and astronomically expensive nuclear power, is an opportunity cost, robbing resources from the real solutions, including renewables and energy efficiency. So, to maximize opportunities for mutual learning, and to collaborate with communities interested in economic development, job creation, infrastructure improvement, and potential funding from DOE, renewables and efficiency should be the focus, not nuclear power, including its hideous "back end," radioactive waste storage and "disposal" (a misnomer on a small, living planet — how can we "dispose" of this forever hazard, that can all too easily escape into the biosphere over time, as its containment fails?). That said, even though nuclear power cannot help solve the climate crisis, it does have "insurmountable risks" all its own, as conveyed by the title and content of the groundbreaking 2006 book by Dr. Brice Smith of the Institute for Energy and Environmental Research, *Insurmountable Risks: The Dangers of Using Nuclear Power to Combat Global Climate Change* (see: <https://ieer.org/resource/books/insurmountable-risks-dangers-nuclear/>). One of these is the dilemma of highly radioactive waste management. Of course we should stop making it. But for what already exists, environmental justice principles preclude the targeting of communities of color and/or low-income communities for CISFs, especially those already disproportionately burdened by hazardous pollution. Yet this is precisely what DOE is attempting to do, while calling it "consent-based siting" as well as an "environmental justice" initiative.

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

As with the Nevada congressional delegation's Nuclear Waste Informed Consent Act bill, introduced into both houses at the beginning of each new session of congress, any state targeted for a permanent repository should of course have absolute and final veto rights against the scheme — that is, the power of

binding non-consent. No state should have highly radioactive waste shoved down its throat, against its will. As the DOE's own BRC itself pointed out, such attempts to "Screw Nevada" at Yucca Mountain, or to screw any other states in a similar way, will almost certainly end in failure, with no repository whatsoever at the end of a bitter fight.

But of course, state veto rights should also extend to CISFs. Such rights should also be extended to Native American Tribal, and Local, governments, targeted with highly hazardous facilities such as permanent repositories and/or CISFs. So, to engage with State, Local, and/or Tribal governments, DOE should guarantee such governments the absolute and final right to veto, or to withhold consent, against such facilities, from the start.

But as mentioned above, DOE should not be initiating such site searches, even if "consent-based." After all, the DOE Office of Nuclear Energy's very own Blue Ribbon Commission on America's Nuclear Future recommended, in its Final Report in Jan. 2012, that DOE be replaced in the realm of highly radioactive waste management. Reasons included a complete and irreparable breach of trust by DOE, in terms of its incompetence and worse, vis-a-vis highly radioactive waste management, storage, and "disposal."

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

DOE should disclose to communities, governments, and/or other stakeholders the truth about the potentially catastrophic consequences of "hosting" forever hazardous high-level radioactive wastes and irradiated nuclear fuel, even for so-called "interim storage." DOE should make clear that "interim" storage could become de facto permanent surface disposal, if a CISF is opened in the absence of a licensed, constructed, and operating permanent geologic repository, which is the exact situation in which we find ourselves.

DOE should disclose the truth about the hazards to human health of exposure to even short-term low doses of ionizing radioactivity, let alone long-term low doses of ionizing radioactivity, even under "routine" or "incident-free" operations of a CISF. But of course, large-scale exposure to high doses of ionizing radioactivity — as due to accidents, attacks, natural or climate chaos caused, extreme weather disasters, and/or simply age-related degradation and failure of containment at CISFs over long enough periods of time — would be even more catastrophic.

DOE should disclose the high risks of reprocessing, since CISFs and reprocessing facilities are often joined at the hip, revolving door style. The private CISF targeted at southeastern New Mexico by Holtec actually grew out of a DOE scheme, the Global Nuclear Energy Partnership (GNEP), which spawned the Eddy-Lea [Counties] Energy Alliance, a pro-nuclear booster group, itself closely affiliated with the Waste Isolation Pilot Plant (which itself experienced an "impossible" leak of plutonium and other transuranic radioactive isotopes into the environment on Valentine's Day 2014, exposing nearly two-dozen workers to ultra-hazardous alpha inhalation doses), itself also a DOE project.

Reprocessing's many risks include nuclear weapons proliferation, large-scale releases of hazardous ionizing radioactivity to air, soil, and surface water (and thus harm downwind, downstream, up the food chain, and down the generations), as well as astronomical expense, which the public will be forced to pay.

DOE should disclose the radioactive stigma impact on all other economic sectors, in communities and even states and even regions that become radioactive waste dumps.

DOE should disclose that most higher paying jobs associated with CISFs will go to specially trained individuals coming from afar, not locally, while most of the very small number of jobs that are created, and accessible by most local residents, will not be very high paying at all.

Such negative impacts, and many others, associated with CISFs should be fully disclosed by DOE to potential "host" communities and states or Native American Tribal Governments, or else any notion of "consent-based

siting” will be undermined, as the “consent” will not be fully informed.

And again, low-income and/or communities of color should not be targeted, lest “consent” not be freely given, but rather an expression of economic desperation, or other form of exploitation by a powerful federal agency, namely DOE, and the nuclear power industry it serves.

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

Communities of color and/or low-income communities should never again be targeted for CISFs. DOE’s own environmental injustice in this regard in the past — targeting Native American reservations for CISFs, as well as targeting Western Shoshone land in Nevada for a permanent repository — is infamous and shameful. It should not be repeated in the present nor future (see: <http://archives.nirs.us/radwaste/scullvalley/historynativecommunitiesnuclearwaste06142005.pdf>; also see, regarding a DOE CISF scheme that turned into a private CISF scheme, targeting the Skull Valley Goshutes Indian Reservation in Utah: <http://archives.nirs.us/radwaste/scullvalley/skullvalley.htm>).

For Women's History Month in March, 2009, President Barack Obama honored Grace Thorpe (10 December 1921 – 1 April 2008), a Sauk and Fox and Pokagon Potawatomi Indian anti-nuclear activist, for her successful work to protect her own and other Native American reservations targeted for highly radioactive irradiated nuclear fuel de facto permanent surface storage parking lot dumps.

Obama's proclamation began:

“With passion and courage, women have taught us that when we band together to advocate for our highest ideals, we can advance our common well-being and strengthen the fabric of our Nation. Each year during Women's History Month, we remember and celebrate women from all walks of life who have shaped this great Nation. This year, in accordance with the theme "Women Taking the Lead to Save our Planet," we pay particular tribute to the efforts of women in preserving and protecting the environment for present and future generations..." It continued: "...Women have also taken the lead throughout our history in preserving our natural environment.”

Re: Grace Thorpe, President Obama proclaimed: “Grace Thorpe, another leading environmental advocate, also connected environmental protection with human well-being by emphasizing the vulnerability of certain populations to environmental hazards. In 1992, she launched a successful campaign to organize Native Americans to oppose the storage of nuclear waste on their reservations, which she said contradicted Native American principles of stewardship of the earth. She also proposed that America invest in alternative energy sources, such as hydroelectricity, solar power, and wind power.”

Thorpe served as a board of directors members of NIRS (Nuclear Information and Resource Service). Her primary organizational affiliation was NECONA (National Environmental Coalition of Native Americans). She once told Beyond Nuclear's Kevin Kamps, in summer 2002, that her motivation to fight nuclear power and radioactive waste came from her experiences in Nagasaki, Japan in the immediate aftermath of the atomic bombing there. Thorpe won a Bronze Star for her service in the Women's Army Auxiliary Corps (WAACs, pronounced "wax") in World War II. After President Obama’s remarkable proclamation honoring Grace Thorpe’s successful life’s work fending off CISFs targeted at Native American reservations, how can the Biden administration DOE now be targeting Native American reservations, other communities of color, and/or low-income communities, especially those already suffering a disproportionate burden of pollution and hazard, with yet another round of proposed CISF

schemes, albeit now under the ruse of “consent-based siting”? It is an EJ violation in and of itself.

Such repeated targeting of communities of color and/or low-income communities, for ever more pollution and hazard, over and over again across decades, is terrorizing and wearying to the communities which must repeatedly muster the wherewithal to fend off such threats, while facing many other challenges, and while living their lives, caring for their families and communities, and striving to preserve their cultural life-ways. In this very real sense, DOE’s current “consent-based siting” RFI promoting CISFs is a significant EJ violation, in and of itself.

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

As mentioned above, the private CISF scheme proposed by Holtec in southeastern New Mexico grew out of DOE’s very own GNEP scheme, a pro-reprocessing and pro-“advanced” reactor RD&D (Research, Development, and Deployment) scheme, that thankfully died a sudden death with the end of the Bush/Cheney administration. But truth be told, Holtec would like to undertake reprocessing at its CISF someday, if it could get away with it — as leaders of ELEA have revealed, as in media interviews, over the years. Holtec might even float the trial balloon of deploying Small Modular Nuclear Reactors at the CISF site. After all, it has a SMNR design/fabrication/sales division. Holtec pulled the bait and switch of acquiring the permanently shutdown Oyster Creek nuclear power plant, supposedly for decommissioning and irradiated nuclear fuel management purposes. But after a short time, Holtec then proposed to build a SMNR at Oyster Creek. Holtec cannot be trusted not to do so at other supposed decommissioning sites (Indian Point, NY; Palisades/Big Rock Point, MI; Pilgrim, MA), as well as at its CISF in NM.

But truth be told, Interim Storage Partners in Andrews County, TX, 0.37 miles upstream from the NM border, would also like to reprocess irradiated nuclear fuel at its CISF, someday, if it can get away with it. After all, Orano (formerly Areva, formerly Cogema), the French government owned nuclear giant, is a major partner in Interim Storage Partners. Orano/Areva/Cogema is also the lead reprocessing entity in the Western world, having contaminated the Atlantic Ocean all the way to the Canadian Arctic with radioactive wastewater pollution, as well as releasing large-scale hazardous radioactive gaseous pollution onto the winds blowing across Europe.

Although DOE is proposing a federal CISF in this RFP, the same dynamic still applies. DOE tends to try to congregate multiple nuclear facilities on the same “nuclear oasis” site, given the popular resistance to all things nuclear in most places nationwide. Wherever DOE can get an inch, it attempts to take a mile. WIPP in NM is another such example. WIPP was sold to the people of NM, against the will of many, with the false promise that if WIPP opened as a so-called “low” level radioactive waste dump (for ultra-hazardous transuranic military wastes), then NM would never be asked to become the “host” for highly radioactive wastes. In fact, WIPP’s existence is what has led its own proponents and boosters to strive to add more and more nuclear industry in the immediate area, what rabidly pro-nuclear U.S. Senator Pete Domenici (Republican-NM) called his “nuclear corridor,” even extending into west TX. After WIPP, URENCO set up shop in Eunice, NM, with NRC’s blessing, even though URENCO was blocked in Louisiana over EJ violations, and was run out of other states, like TN, where it attempted to set up shop. URENCO set up shop in southeastern NM despite widespread resistance in NM, and nationally. Then Waste Control Specialists, LLC opened a national “low” level radioactive waste dump, just several miles east of Eunice, NM, just across the NM/TX state line in Andrews County. International Isotopes, a depleted uranium hexafluoride deconversion facility, has been proposed near Hobbs, NM.

All of this is in addition to past nuclear abuses in southeastern NM, such as the Gnome-Coach Experimental (Nuclear Explosive Device) Test Site. Not to mention the nuclear abuses across NM before (and after) WIPP

came in, including at Los Alamos National Lab, the Trinity atomic bomb test site, Sandia National Lab and Kirtland Air Force Base, the uranium mining region of northwestern NM and the adjacent Four Corners area, in Pueblo and Navajo/Diné country, abuses at the White Mesa Uranium Mill in Ute Mountain Ute country in Colorado/Four Corners, etc. The radioactive racism perpetrated by the nuclear industry and DOE against the people of NM is infamous and overwhelming, as well as still ongoing.

All this to say that adding environmental injustice upon environmental injustice does not make for environmental justice. That is why DOE's attempted assertion that the jobs, infrastructure development, and potential funding associated with "hosting" a CISF, would contribute to social equity and EJ, is disingenuous. Proposed legislation on Capitol Hill, such as the Nuclear Waste Administration Act and other bills, purportedly intended to enact into law recommendations made by the DOE's own BRC, has suggested that preference should be given to sites that could "host" a so-called pilot CISF, that could then "host" a full-scale CISF, that could then "host" a permanent repository. Of course, this means that any community that makes the mistake of agreeing to "host" a pilot CISF, will then be put under extreme pressure to also agree to "host" a full-scale CISF, and then will be put under even more pressure to agree to "host" a permanent repository. In a very real sense, this is an echo of NM's prior experience with Los Alamos, Trinity, WIPP, etc. over the course of eight decades, and counting. And, as mentioned above, such pressure could extend beyond "hosting" radioactive waste dumps, to such other high hazard nuclear facilities as reprocessing centers, SMNRs, etc. This amounts to a Faustian bargain. Once the nuclear beast (a phrase coined by the NM-based Nuclear Issues Study Group in 2017 for its conference at UNM, "Dismantling the Nuclear Beast") gets its claws into a "nuclear oasis," it will never let go. It will continue to press to add more and more hazardous nuclear industry facilities, into often times low-income "host" communities, which never consented to the initial nuclear "pilot" facilities in the first place.

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

As mentioned immediately above, the nuclear beast, once its claws are in, will press for more and more. A federal CISF could well become a permanent geologic repository, whether or not the site is suitable, or socially acceptable, for either a CISF or a repository. Alternatively, a federal CISF, just as with a private CISF, would likely become a de facto permanent surface storage site, or more accurately, a de facto permanent surface disposal site, a parking lot dump.

Another version of this involves the company Deep Isolation, Inc., pushing untested deep borehole disposal for irradiated nuclear fuel and highly radioactive wastes. Deep Isolation, Inc. is staffed by many a former DOE official, yet another example of the revolving door between federal and private, between DOE and industry. Truth be told, like a radioactive snake oil salesman, Deep Isolation, Inc. would like to sell deep borehole disposal anywhere it can get away with it, be that at CISFs, at reactor sites, or elsewhere. So yet again, once a nuclear beast is let inside the house, it won't leave, till it wrecks the place.

Another important point here is the spirit, and in fact the letter, of the law embodied in the Nuclear Waste Policy Act of 1982, as Amended. States with relatively small populations, and thus relatively less political and economic power, made sure to include in the law a wise precaution, prohibiting DOE from taking title to commercial irradiated nuclear fuel, unless and until a permanent geologic repository was licensed, constructed, and operating. Otherwise, the political will to ever go forward with a repository would be lost, and the CISF would become de facto permanent surface disposal, a parking lot dump.

Despite this clear prohibition in federal law, NRC has proceeded to process the Holtec and ISP private CISF license applications, which clearly indicate a major or even overriding role for DOE involvement, including paying most to all costs, including a hefty profit margin to the

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private company CISF owners — that is, effectively a title transfer for commercial irradiated nuclear fuel from private industry owners, to DOE (that is, taxpayers). These supposedly “private” CISF schemes, with their overriding dependence on DOE (taxpayers) to pay all the freight, significantly blurs the lines of distinction between “private” and “federal” CISFs, in violation of the Nuclear Waste Policy Act of 1982, as Amended. (See Beyond Nuclear’s series of fact sheets for more information on this:

<http://archive.beyondnuclear.org/centralized-storage/2021/9/11/new-beyond-nuclear-fact-sheets-opposing-consolidated-interim.html>)

A broad coalition of environmental groups, oil/natural gas/ranching/agricultural interests, and even the States of NM and TX themselves, have filed federal appeals against both CISFs, ISP (which NRC licensed in Sept. 2021), and Holtec (which NRC will likely license later this year). Bipartisan U.S. congressional delegations in the Permian Basin have also spoken out strongly against the CISF schemes.

In addition, DOE’s (using federal taxpayer money) paying most to all the freight for these supposedly “private” CISFs amounts to a radical departure from many decades of established U.S. law, regulation, and policy, as affirmed by federal court precedent — that storage of commercial irradiated nuclear fuel is the private industry’s responsibility (and liability), while permanent disposal is the federal government’s responsibility (and liability). In other words, title/ownership and liability cannot transfer, from private industry to DOE (American taxpayers) unless and until a permanent geologic repository has opened. CISFs, whether private or federal, or some combination of the two, proceeding in the absence of an operating repository, thus violates the spirit and letter of the Nuclear Waste Policy Act of 1982, as Amended, to the peril of CISF “host” communities, states, Native American reservations, etc.

4. What other issues should the Department consider in developing a waste management system?

As per above, the BRC in Jan. 2012 recommended DOE be replaced as the agency in charge of irradiated nuclear fuel and highly radioactive waste management. Therefore this entire proceeding should be conducted by another agency. The Dec. 2015-Jan. 2017 DOE “consent-based siting” public comment proceeding further breached the public’s trust. Large numbers of public comments, opposed to CISFs, were largely to entirely ignored by DOE in that proceeding. DOE even scrupulously avoided hosting public comment meetings in the very places in the U.S. targeted for “private” CISFs, albeit with deep DOE involvement, in TX and NM. Texans and New Mexicans opposed to the CISFs had to travel to AZ to take part in DOE’s closest “consent-based siting” public comment meeting. DOE being in charge of this process is a blatant contradiction of its own BRC’s recommendations.

For more information, contact: [REDACTED].

Thank you,
Casey Lyons
It/They pronouns
[REDACTED]

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From: Diane Marks
Sent: Friday, February 18, 2022 8:50 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

This request appears to be for comments on how/processes to collect public input on storage of old nuclear materials. If so, the following are my suggestions, honed from protesting against many environmentally-destructive project in CA.

1. The process of notification is fundamentally important in eliciting valid citizen input, and must not be used by agencies to try to hide the process and keep citizens from giving input.
2. Ensure the notice of where and time period for collecting comments is published in a fair/timely manner. One month is not sufficient for most citizens to learn about and then collect their thoughts to write about their environmental concerns and suggestions. This means publishing the notice for participation in a very local newspaper and other local media, not in a big city newspaper 30-50 miles away. Certainly not in the Federal Register alone. Local people read local newspapers avidly. While this takes more time and money, it is fairer to rural potential commenters.
3. Informational workshops need to be held in many small locations around the proposed storage sites, both rural and urban. They should be both in the evening and on weekends. 30 to 50 miles away is a deterrent to many working people to go to the meeting. Too bad if it costs more. The purpose of the workshop should be to provide neutral information, not propaganda directed toward pushing people to go along with the agency's plan. Get people trained in mediation to help in the workshops.
4. There must be an alternative proposed for LOCAL ON-SITE STORAGE, as people were promoting many decades ago, to ensure nuclear materials will not be trucked across the country and through local neighborhoods, rural or urban.

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From: zRepresentative Kathleen McCarty
Sent: Friday, March 4, 2022 4:26 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage - letter attached
Attachments: CT Rep McCarty RFI interim storage sites ltr.pdf

RFI: Consent-Based Siting and Federal Interim Storage - letter attached

Sincerely yours,

Kathleen M. McCarty
State Representative, 38th District
Waterford, Montville

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March 4, 2022

Thank you very much for this opportunity to submit commentary on the U.S. Department of Energy's "Request for Information" RFI related to a consent-based process focusing on interim storage sites for spent nuclear fuel storage. My name is Kathleen McCarty and I am the Connecticut State Representative for Waterford, my hometown and the host community for Millstone Nuclear Power Station which has been in safe operation for over five decades.

First, I would like to recognize and commend Congressman Joe Courtney for his continued advocacy and resolve in finding safe, and reliable long-term solutions concerning storage for spent nuclear fuel in Connecticut and throughout the nation.

I am very proud and pleased to live and represent the community of Waterford, one that values the contributions that Millstone Power Station has made and continues to make to the Town, region, and to the State of Connecticut. Millstone's two nuclear power plants produce approximately 16 million megawatts of reliable, around the clock, carbon-free energy, all at a beneficial price to the ratepayer. This energy output translates to more than half of the electricity used by Connecticut's consumers.

Without a doubt, nuclear power will be critical to ensuring that Connecticut meets its targeted 100% zero carbon electricity goals outlined in its Integrated Resources Plan by 2040. Another important benefit to housing Millstone Power Station in Waterford is its considerable economic contribution to the community and to the state.

Having enumerated many of its benefits to the community, it must be stated however that it was never the intention for Millstone Power Plant to store spent nuclear fuel on a permanent basis at its site in Waterford. On site-storage of the spent fuel was necessary since a permanent Federal storage site was not a viable alternative.

A consent-based siting process is absolutely critical and necessary in identifying sites to store spent nuclear fuel in our nation. The process must be fair, inclusive, and equitable allowing the host community the authority to make the final decision. In my view, an interim storage facility should not be constructed or situated in local, highly populated communities. I would hope that, if not Yucca Mountain, another remote site identification area will be realized through the consent-based siting

process. The tribal, state and, local governments do have a role to play in a community-based siting process, it must nevertheless be in conjunction with the residents who should have the absolute final say.

While Waterford residents appreciate the contributions of Millstone Power Station, I know that neither they, nor the Town would support accepting Millstone Power Station as a storage location from other locations. In fact, the removal of existing and future spent fuel from Millstone Power Station was one of the topics at a recent community event. The removal of spent nuclear fuel at Millstone Power Station would also allow for increased capacity at the site for additional clean energy operations.

As the U.S. Department of Energy continues to gather its information on the possible formation of interim storage facilities, it should not lose sight of establishing a permanent repository. I will look forward to receiving a summary of the responses that the Department of Energy has received in its request for information and an updated draft consent-based siting process. Thank you in advance for your consideration of my comments.

Sincerely yours,

A handwritten signature in blue ink that reads "Kathleen M. McCarty". The signature is fluid and cursive, with the first name "Kathleen" being more prominent than the last name "McCarty".

Kathleen M. McCarty
State Representative, 38th District
Waterford, Montville

From: Joseph, Joshua
Sent: Friday, March 4, 2022 10:21 AM
To: Consent Based Siting
CC: Mccullough, Margaret Gibb; Rice, William
Subject: [EXTERNAL] Consent-Based Siting and Federal Interim Storage (Response from Bechtel National, Inc.)
Attachments: DOE Consent Based Siting RFI Response_Bechtel_03Mar2022.pdf

Dear Representative (Office of Spent Fuel and Waste Disposition),

On behalf of Bechtel National, Inc. and President, Margaret McCullough, I am pleased to submit our ***Request for Information Response*** to the *Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste*.

Please contact me if there are any questions or concerns.

Regards,
-Joshua-



Joshua Joseph, Ph.D. | Business Development Representative
Nuclear Security & Operations and Environmental | NS&E

Bechtel National, Inc. | Reston, Virginia, USA | R01/3/A110

RL: [bechtel.com](https://www.bechtel.com)

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March 3, 2022

To: Office of Spent Fuel and Waste Disposition
Office of Nuclear Energy, Department of Energy

From: Bechtel National, Inc.

Re: *Request for Information (RFI) Response:*
Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste

Bechtel National, Inc. applauds the Department of Energy (DOE) for creating the opportunity for public comment on the *Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste*. Welcoming the perspective and insights from the numerous stakeholders involved will yield a more informed path forward than would otherwise be possible. Success in this domain is essential for DOE's Office of Nuclear Energy to deliver on its promise *to advance nuclear energy science and technology to meet U.S. energy, environmental, and economic needs*.ⁱ

Bechtel has been an industry partner and leader in the development of nuclear energy since the dawn of the Nuclear Age. In 1949, Bechtel constructed the Experimental Breeder Reactor-1 (EBR-1) in Idaho — the first reactor to provide electrical power from nuclear fission. More than 70 years later, Bechtel continues its legacy of leadership in this arena, helping our customers deliver zero-carbon, clean energy solutions across the globe:

- Bechtel has performed engineering or construction services on more than 80% of the nuclear power plants in the U.S.
- Bechtel is completing the construction of the only large-scale nuclear power project under construction in the U.S. – Vogtle Units 3&4 in Georgia
- Bechtel performed engineering, procurement, construction (EPC) and commissioning on the last nuclear reactor to come on-line in 2016 – Watts Bar 2 in Tennessee
- Bechtel is involved in the next evolution of nuclear power generation for advanced reactor technologies and small modular reactors – EPC contractor for the Sodium Sodium Fast Reactor project currently underway as part of DOE's Advanced Reactor Demonstration Program (ARDP)
- Bechtel is supporting U.S. Government initiatives in expanding U.S. participation in global nuclear power expansion – FEED to develop nuclear power in Poland

Bechtel continues to be ideally positioned to support and complement DOE as it progresses the advance of nuclear energy throughout the United States and across the globe. For well over 40 years, Bechtel has been a consistent, capable, and highly valued partner as DOE has addressed our nation's Cold War environmental legacy. As Bechtel supported the Department in its pursuit of licensing the Yucca Mountain site, we will continue to leverage that experience and expertise in support of current DOE initiatives.

Questions have been posed across three broad areas of consideration:

- Area 1: *Consent-Based Siting Process*
- Area 2: *Removing Barriers to Meaningful Participation*
- Area 3: *Interim Storage as Part of a Waste Management System*

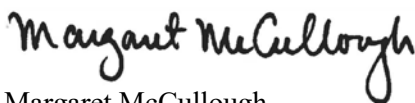
Bechtel believes each of the Areas of Inquiry, along with each of the accompanying questions, establish a strong foundation to collect the necessary information to proceed with the appropriate engineered solutions contextualized by the relevant government, commercial, and community constraints, concerns, and opportunities. We are mindful of the importance of delivering projects with due consideration to the social, political, economic, environmental, and justice complexities that attach. Bechtel stands ready to provide the nuclear and EPC experience necessary to deliver the DOE's technical solutions.

In closing:

- Bechtel reiterates its support for the advance of DOE's consent-based siting initiative
- Bechtel reiterates its support for DOE in removing barriers to meaningful participation
- Bechtel reiterates its support for the inclusion of interim storage as an integral part of a Waste Management System

We look forward to contributing to your vital efforts to advance nuclear energy across the nation and over the globe, with an acute appreciation for the importance of identifying and implementing an integrated waste management system.

Kind regards,



Margaret McCullough
President

Company Contact Details:

Joshua Joseph, Ph.D.
Bechtel National, Inc.

Phone: ([REDACTED]

Email: [REDACTED]

ⁱ Office of Nuclear Energy Strategic Vision, Department of Energy; January 08, 2021.

From: SUE MCHENRY
Sent: Friday, January 28, 2022 7:29 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

Look, I support nuclear, but am pretty aghast at your calling this "interim" storage.

The spent fuel is what is wrong with nuclear energy. And of course war is what is wrong with nuclear arms, that goes without saying, only I just said it. I support research into fusion as fission creates this whole mess.

What we need is a solution to waste, much more than "interim" (and you can read that to be "for our lifetime and many generations to come").

So, create no more nuclear arms which will result in zero waste from that activity.

Work to get fusion energy which will create less to no waste.

Make those profiting from power generation pay for waste disposal, not the public. And while you are at it, put it in their backyards, not that of the poor and disenfranchised!

Make sure you don't poison anything else while you are at it.

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From: Rick McLeod

Sent: Thursday, February 17, 2022 12:26 PM

To: Consent Based Siting

CC: Amy Merry

Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

Attachments: Response to IPC; SRSCRO Comments - Draft Consent-Based Siting Process - 2-15-17.docx; Draft Consent-Based Siting Process and Siting Considerations.pdf; Final Draft DWR Plan.pdf; SRSCRO Comments - Draft Plan for a Defense Waste Repository - 2-15-17.docx

We believe we can not improve on the comments previously submitted – see attached documents **from 2016 and 2017. There appears to be nothing new in DOE's approach to Consent Based siting** since the 2016-2017 timeframe. In addition, several of the comments previously provided have never been addressed.

From these previous comments, we would like to emphasize the following:

- First in the sequence of tasks addressed in the Draft Consent-Based Process and Siting Considerations (see attached), is the need to establish a non-DOE entity with the legal authority to make a consent-based agreement binding. Such an special purpose, independent organization/entity has to come first before any host community could sign on to an consent-based agreement.
- Second, DOE needs to indicate who signs and who has authority to sign such an agreement for the Government, the State, or local Community.
- Third, **DOE does not address “exit ramps” in the current and previous consent-based documents**. If one or more of the parties decide to exit the process, mechanisms for this to occur should be addressed in the consent-based siting process.
- Fourth, we support the funding opportunity through grants or other methods for communities interested in learning more about consent-based siting, nuclear waste management, siting considerations, and the role a waste management facility (or facilities) may play in the community as addressed in Step 3 of Phase I.
- Finally, DOE needs to address the defense waste repository (DWR) plan originally proposed in 2017. Without a geologic repository, defense wastes could remain orphaned in our communities that never planned to be permanent or long-term storage sites. A final geologic repository - whether at Yucca Mountain or elsewhere - is essential to the final disposition of **defense waste and integral to the success of DOE's Environmental Cleanup programs** regardless of issues of combining it with commercial spent fuel or not. A path forward to begin the studies and actions needed to develop a potential repository for defense waste should be pursued along side any consent-based process.

Respectfully,

Rick McLeod
President/CEO
SRSCRO

[REDACTED]
[REDACTED]
[REDACTED]

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From: Rick McLeod
Sent: Thursday, July 21, 2016 8:03 AM
To: consentbasedsiting@hq.doe.gov
CC: Amy Merry [REDACTED]
Subject: Response to IPC

I participated in the second public meeting held in Atlanta, Georgia on April 11th. I was also a panel member, so as a caveat, some of these comments may be redundant to my remarks in the transcript from that meeting. Although, I have tried to elaborate and provide more substance to my position.

First, DOE-NE, and John Kotek in particular, should be commended for hosting 8 public meetings across the Nation in an effort to formulate public discourse on a very difficult topic. Consent based siting is very esoteric, at the least. Furthermore, it is just one process in a sequence of activities and discrete tasks. For the consent based process to work properly, it is extremely important that all of the sequence of tasks are followed. Developing a consent based approach to siting may be just one of these activities but if it is implemented out of sequence, all efforts may be for naught. The identification and sequence of these tasks are more critical than the proposed 5 key questions DOE has asked the general public to consider.

The meeting summary from the April 11th Atlanta, Georgia meeting did not reflect the strong opinions from both sides that establishment of a non-DOE entity to perform these sequence of tasks needs to be first. I don't know how any host community could sign on to an agreement without having some special purpose, independent organization behind the agreement with the legal authority to make it binding. Due to the past experience and the lack of trust, DOE cannot function as this **organization. Host communities have been "burned" too many times** by promises made and promises broken by DOE.

So when you reflect on the necessary sequence of tasks, I hope DOE would consider the initial list below and begin to add others. It may not be necessary for them to be implemented in series, some may be implemented in parallel. But they need to be fully developed and prioritized for DOE to move ahead with its goal to develop solutions for the long-term, sustainable management **of our nation's** spent nuclear fuel and high-level radioactive waste.

- Establish an independent organization with legal authority
- Establish a set of core incentives
- Negotiate additional (beyond core incentives) and other unique incentives and special conditions with host states and communities
- Determine and communicate the benefits and risks for host states and communities
- Provide upfront resources for independent community analysis, education, and outreach for not only consent based siting efforts but all components including research & development associated with the management of our **nation's spent nuclear fuel and high-level** radioactive waste
- Establish clear technical criteria
- Establish clear standards for what site screening requires
- Establish clear standards for repository development
- Establish clear standards for radiation and environmental protection
- Provide provisions for local community, State, and regulatory oversight authority

DOE cannot do this alone, Congress has to appropriate the required funding and develop and pass legislation that establishes this special purpose, independent organization with legal authority. The **final execution of this sequence of tasks needs to be done outside of the DOE. I disagree with DOE's**

1067

position that they can't wait for that other entity to form. I think it is imperative. This organization needs to be seen as trustworthy and credible, and knowledgeable and accountable. One of the first steps of the organization would be to partner with elected officials, to hold town hall meetings, to ensure that the public was informed; to really be able to work at that state and local level to ensure that a site selection process was certainly fair and equitable and had that community's well-being in mind.

We've seen recent problems with communities consenting to DOE backed projects when the decision is made to jump to the end result. One can just look to the deep borehole rejection, which was a research project, by communities in both South and North Dakota. In addition, the State of Idaho is not in unison on the consent to bring commercial spent fuel into Idaho National Laboratories for research purposes. DOE should look to these recent examples and not just focus on the consent-based siting process but toward the entire sequence of events.

Thanks,

Rick McLeod
Executive Director
SRSCRO

[REDACTED]
[REDACTED]

[REDACTED]
[REDACTED]

February 15, 2017

U.S. Department of Energy
Office of Nuclear Energy
Draft Consent-Based Siting Process
1000 Independence Ave. SW.
Washington, DC 20585

RE: Response to Draft Consent-Based Siting Process

Our organization – the Savannah River Site Community Reuse Organization (SRSCRO) is the U. S. Department of Energy’s designated Community Reuse Organization. We are charged with developing and implementing a comprehensive strategy to diversify the economy of a five-county region in the Central Savannah River Area (CSRA) of Georgia and South Carolina.

The SRSCRO is governed by a 22-member Board of Directors composed of business, government and academic leaders from both Georgia and South Carolina. Initially, its mission was to develop and implement a regional economic development plan utilizing technology-based facilities at the Savannah River Site. Today, SRSCRO remains focused on diversifying the region’s economy by supporting new business ventures that create new jobs in our region.

The SRSCRO Board of Directors recognizes that the Savannah River Site has a major impact on our region’s economy as the principal employer, a major purchaser of goods and services and an institution with technical capabilities that can serve as the basis for the development and/or expansion of private employment in the region.

The SRSCRO provided comments on the Invitation for Public Comment (IPC) concerning the design of a fair and effective process for a consent-based approach of an integrated waste management system to transport, store, and dispose of spent nuclear fuel and high-level radioactive waste from commercial electricity generation, as well national defense activities on July 21, 2016.

In these comments, we noted that the consent based siting process is just one process in a sequence of activities and discrete tasks which need to be accomplished for a consent-based approach to work effectively. Furthermore, we believed it is extremely important that all of the sequences of tasks are followed. Developing a consent based approach to siting may be just one of these activities but if it is implemented out of sequence, all efforts may be for naught.

The meeting summary from the April 11th Atlanta, Georgia consent-based IPC meeting did not reflect the strong opinions from both sides that establishment of a non-DOE entity to perform these sequence of tasks needs to be first. I don't know how any host community could sign on to an agreement without having some special purpose, independent organization behind the agreement with the legal authority to make it binding.

This is not addressed in the Draft Consent-Based Siting Process but needs to be. In addition, below is a list of comments, questions, and concerns, we would like to see resolved and answered before the Draft Consent-Based Siting Process becomes final.

1. Again, the document does not address who signs and who has authority to sign the agreement for the Government, the State, or local Community.
2. A research and development (R&D) facility is addressed in DOE's concept for the Consolidated Interim Storage facility but not as part of the Pilot Interim Storage facility. Is this an oversight? As noted in the document, DOE plans to build on experienced gained through the development of the pilot storage facility. It seems that DOE would want a similar or prototype R&D facility at the pilot facility as a test case.
3. DOE does not address "exit ramps" in this document. If one or more of the parties decide to exit the process, mechanisms for this to occur should be addressed in the consent-based siting process.
4. Why is there no mention of Yucca Mountain in this document, especially if it is DOE's intent to co-locate the pilot or consolidated storage facility with a geologic repository?
5. It appears the document identifies the interim period to be between 41½ years to 102 years per Phase V of the draft steps in the siting process. Does DOE really consider this period of time to be "Interim"?
6. Phase I of the draft steps in the siting process appears to address the steps for each type of facility. This assumes to include the pilot storage facility. However, all of the following phases only address the interim storage facility and the repository. Was the pilot facility specifically left out of Phase II-Phase V for a reason? It should be addressed and a rough estimate of schedule included in the final document.
7. We support the funding opportunity through grants or other methods for communities interested in learning more about consent-based siting, nuclear waste management, siting considerations, and the role a waste management facility (or facilities) may play in the community as addressed in Step 3 of Phase I. However, Step 4 in Phase I seems to limit the

response to the funding opportunity to only communities with an initial interest in learning more about consenting to host an interim storage facility or repository. The same wording “for communities interested in learning more about consent-based siting, nuclear waste management, siting considerations, and the role a waste management facility (or facilities)” should be included in Step 4 as well.

Thank you for allowing our voice to be heard.

DRAFT CONSENT-BASED SITING PROCESS

for Consolidated Storage and
Disposal Facilities for Spent
Nuclear Fuel and High-Level
Radioactive Waste

January 12, 2017



U.S. DEPARTMENT OF
ENERGY

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1. INTRODUCTION

The Administration's *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* (Strategy),¹ released in 2013, calls for "a phased, adaptive, and consent-based approach to siting and implementing a comprehensive management and disposal system" for spent nuclear fuel (SNF) and high-level radioactive waste (HLW). In December 2015, the Department of Energy (DOE) launched an initiative to develop a process for siting disposal or storage facilities for these materials collaboratively with the public, communities, stakeholders, and governments at the tribal, state, and local levels. As part of the first phase of this initiative, DOE issued an Invitation for Public Comment² and conducted a series of public meetings with stakeholders and communities around the country to seek feedback and inform future efforts.

This document outlines DOE's current thinking regarding specific steps and broader design principles for implementing a consent-based siting process. It reflects the input gathered from a wide range of participants in DOE's earlier outreach efforts,³ as well as the findings of several expert groups that have reviewed these issues, including the Blue Ribbon Commission on America's Nuclear Future (BRC).⁴ In addition, this document offers preliminary views on siting considerations for federal SNF and HLW storage and disposal facilities. As DOE continues to refine its approach to consent-based siting, it is committed to proceeding in a manner that is inclusive, participatory, and responsive to new information and the suggestions and recommendations of communities, stakeholders, and the public.

2. RATIONALE FOR MOVING FORWARD WITH A CONSENT-BASED SITING PROCESS

As the BRC explained, "finding sites where all affected units of government, including the host state or tribe, regional and local authorities, and the host community, are willing to support or at least accept a facility has proved exceptionally difficult."⁵ Lacking a disposal solution, most of the nation's inventory of SNF is currently being stored at commercial nuclear reactors around the country, and additional quantities of HLW and SNF are being stored at various DOE sites. The issuance of this draft consent-based siting process reflects the DOE's judgment—grounded in conclusions reached by previous studies⁶ and real-world experience with siting controversial facilities in the United States and elsewhere—that a consent-based process is more likely to deliver successful outcomes.

¹ U.S. Department of Energy, *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*, January 2013. <https://energy.gov/downloads/strategy-management-and-disposal-used-nuclear-fuel-and-high-level-radioactive-waste>.

² U.S. Department of Energy, *Invitation for Public Comment to Inform the Design of a Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities*, 80 FR 79872, December 23, 2015. <https://www.federalregister.gov/documents/2015/12/23/2015-32346/invitation-for-public-comment-to-inform-the-design-of-a-consent-based-siting-process-for-nuclear>

³ U.S. Department of Energy, *Designing a Consent-Based Siting Process: Summary of Public Input Final Report*, December 29, 2016. <https://www.energy.gov/ne/downloads/designing-consent-based-siting-process-summary-public-input-report>.

⁴ The BRC formed in 2010 at the direction of President Obama to develop a new strategy for managing the nation's spent nuclear fuel and high-level radioactive waste. It issued a number of recommendations in 2012 that helped inform the Administration's Strategy. A reference to the BRC's Report to the Secretary of Energy is included in footnote 5.

⁵ Blue Ribbon Commission on America's Nuclear Future, *Report to the Secretary of Energy*, January 2012.

<https://energy.gov/ne/downloads/blue-ribbon-commission-americas-nuclear-future-report-secretary-energy>.

⁶ National Research Council of the National Academies, *One Step at a Time: The Staged Development of Geologic Repositories for High-Level Radioactive Waste*, 2003. <https://www.nap.edu/read/10611/chapter/1>.

DOE also recognizes that action by Congress will be needed to implement some of the steps and design principles outlined in this report, and that implementing an integrated waste management system⁷ that includes disposal capabilities can be expected to take decades. In light of this reality and in the interest of getting started, DOE has sought to outline key steps for a consent-based siting process that could be applied by any federal implementing organization, including a new nuclear waste management entity as discussed in the Strategy.

3. TYPES OF FACILITIES

DOE's vision is for an integrated waste management system that will provide for the safe and secure transportation, storage, and disposal of the nation's SNF and HLW. It could include:

- A pilot interim storage facility, initially focused on accepting spent nuclear fuel from shutdown commercial reactor sites
- A larger, consolidated interim storage facility, potentially co-located with the pilot facility and/or with a geologic repository, that provides flexibility within the integrated waste management system
- One or more geologic repositories for SNF and HLW

The Department is also investigating the concept of deep borehole disposal, which could be an option for the disposal of smaller and more compact waste forms currently stored at DOE sites. Transportation infrastructure to move SNF and HLW will be needed. Planning for the safe and secure shipment of materials to a storage or disposal facility is a critical activity that demands close cooperation between the implementing entity and tribal, state, and local governments along likely transportation routes. As it has done for past radioactive materials shipments, DOE is committed to working with tribal, state, and local authorities, including state regional groups,⁸ to address transportation issues and respond to the concerns of affected communities.

The remainder of this section provides a brief overview of the existing U.S. SNF and HLW inventory and a short description of the types of facilities that DOE would propose to site using a consent-based approach. Each poses different kinds and levels of opportunity, benefits, risk, and impact, and thus presents different siting challenges. Project cost and timescales for siting, licensing, constructing, operating, and closing a facility will vary from facility to facility.

3.1 SNF and HLW Types and Quantities

The types and quantities of material in the nation's inventory of SNF and HLW vary. SNF from the operation of commercial nuclear power plants accounts for the largest portion of the inventory: approximately 75,000 metric tons of heavy metal (MTHM) in total.⁹ This SNF exists in the form of

⁷ DOE webpage on Integrated Waste Management <https://energy.gov/ne/integrated-waste-management>.

⁸ For example, DOE already interacts frequently with groups such as the Southern States Energy Board, the Western Interstate Energy Board, and the Midwestern Office and Eastern Regional Conference of the Council of State Governments on transportation planning issues and shipping programs associated with nuclear materials.

⁹ Spent nuclear fuel quantities are often reported in terms of metric tons of heavy metal (MTHM). This is a measure of the amount of uranium used in the fuel and does not account for other metals used in the manufacture of a nuclear fuel assembly. The 75,000 MTHM figure includes commercial SNF in storage as of the end of 2015.

fuel rod assemblies, and nearly all of it is being stored at the reactor sites where it was generated, either submerged in pools of water (wet storage) or in shielded casks (dry storage).

High-level radioactive waste, most of which was generated by reprocessing for defense nuclear activities, consists of roughly 90 million gallons of high-level waste liquids, sludges, and solids. Most of the defense high-level radioactive waste in DOE's current inventory is stored at the Hanford and Savannah River sites and is planned to be (or has already been) vitrified into a glass form. DOE also manages defense high-level radioactive waste in a dry calcine form at the Idaho National Laboratory. DOE also manages spent nuclear fuel from the operation of the U.S. Navy nuclear fleet, and from research and development (R&D) activities. The DOE spent nuclear fuel inventory totals approximately 2,400 MTHM.¹⁰

3.2 Pilot Interim Storage

The Strategy calls for the development of a pilot interim storage facility with limited capacity that would initially be focused on taking spent nuclear fuel from shutdown reactor sites. This pilot facility would need to have the capability to transfer large dry storage canisters (DSCs)¹¹ from transportation casks into dry storage. DOE's current concept for this type of facility includes constructing and operating a canister handling building, a canister transfer facility, a storage cask fabrication facility, an administration building, and a visitor center. In addition, a pilot interim storage facility may provide expanded storage capability such that additional spent nuclear fuel could be handled from other shutdown and/or operating reactors that have dual-purpose casks (DPCs) and transportable storage casks (TSCs) available to ship.

3.3 Consolidated Interim Storage

Building on experience gained through the development of a pilot storage facility, the Strategy includes a larger, consolidated interim storage facility that would provide sufficient capacity to accept spent nuclear fuel from operating commercial nuclear power plants and, if necessary, from DOE sites. A larger storage facility could potentially be co-located with the pilot facility and/or a geologic repository, and could accommodate a much broader variety of storage systems. DOE's current concept for this type of facility includes constructing and operating facilities similar to those identified as part of a pilot interim storage facility, but could also be expanded to include a bare fuel receipt facility, a canister inspection and remediation facility, a research and development facility, a repackaging facility, and a fleet and cask maintenance facility. The scope of this facility would differ from that of the pilot facility in that the total spent nuclear fuel storage capacity could be as much as 70,000 MTHM. A larger facility (or facilities) would continue to receive DPCs and TSCs, and may also receive and store individual fuel assemblies, depending on the spent nuclear fuel acceptance strategy.

¹⁰ U.S. Department of Energy, *Assessment of Disposal Options for DOE-Managed High-Level Radioactive Waste and Spent Nuclear Fuel*, October 2014, p. 8-9. <https://www.energy.gov/ne/downloads/assessment-disposal-options-doe-managed-high-level-radioactive-waste-and-spent-nuclear>.

¹¹ This draft siting process document reflects concepts that could support future decision-making by DOE. No inferences should be drawn from this document regarding future actions by DOE. To the extent that elements in this draft siting process document conflict with provisions of the Standard Contract, the Standard Contract provisions prevail.

3.4 Deep Geologic Disposal

The Strategy includes at least one permanent geologic repository for spent nuclear fuel and high-level radioactive waste from commercial and defense activities. After the President's March 2015 finding that the development of a repository for defense high-level radioactive waste only is required, DOE also has been planning for a separate repository for the disposal of SNF and HLW resulting from atomic energy defense activities and/or DOE research and development activities (hereinafter referred to as a defense waste repository).¹²

Any permanent geologic repository would be designed based on the geologic media in which it is sited. The BRC report provides a useful overview of the basic concept:

*In a mined geologic repository, wastes would be placed in engineered arrays in conventionally mined cavities deep beneath the earth's surface. The waste itself would be contained in canisters or other packages appropriate to its particular form, chemical content, and radiation intensity. As developed and studied around the world, proposals for geologic disposal also employ the concept of multiple barriers. These include both engineered and geologic barriers that improve confidence that radioactive constituents will not return to the biosphere in biologically significant concentrations.... While engineered barriers would be tailored to a specific containment need, geologic barriers would be chosen for their in-situ properties with respect to both waste containment and isolation.*¹³

A geologic repository would also include a number of surface systems and facilities to support waste receipt, handling, and disposal operations. Many of these surface support systems would be similar to those needed at an interim storage facility. Unlike a storage facility, however, a geologic repository would also need systems and capabilities to support subsurface operations.

Borehole disposal is another form of deep geologic disposal that may be appropriate for smaller waste forms. This disposal concept consists of drilling borehole(s) to a total depth of about 5,000 meters (16,400 feet or greater than three miles) into crystalline basement rock, placing waste packages in the lower emplacement zone portion of the borehole, and sealing and plugging the upper portion of the borehole. The required bottom-hole diameter of the borehole(s) depends on the waste package configuration for the reference concept, but ranges from 22 centimeters to 43 centimeters (8.5 inches up to 17 inches). DOE is currently pursuing research and development efforts not involving nuclear waste to investigate the feasibility of the deep borehole disposal concept.¹⁴

¹² U.S. Department of Energy, *Draft Plan for a Defense Waste Repository*, December 2016. <https://www.energy.gov/ne/defense-waste-repository>.

¹³ Blue Ribbon Commission on America's Nuclear Future, *Report to the Secretary of Energy*, January 2012, p. 29.

¹⁴ U.S. Department of Energy, Request for Proposal Number/Title: DE-SOL-0010181, Deep Borehole Field Test. <https://www.fedconnect.net>.

4. GENERAL DESIGN PRINCIPLES FOR A CONSENT-BASED SITING PROCESS

Building on input gathered during the initial public engagement phase, DOE has identified a number of design principles for an effective consent-based siting process. The Department is committed to adhering to these design principles in its efforts to refine and move forward with the consent-based siting framework detailed in Section 5.

- *Prioritization of Safety* – The highest priority will be to site, design, construct, operate, and close nuclear waste management facilities in a safe and secure manner that is protective of human health and the environment.
- *Environmental Responsibility* – The siting process will support the development, construction, operation, and closure of facilities that successfully isolate radioactive materials from the environment and use best practices with respect to rigorous planning, implementation, and monitoring.
- *Regulatory Requirements* – The siting process will support the development of facilities that meet or exceed applicable regulatory requirements. Regulatory requirements will be applied rigorously and transparently.
- *Trust Relationship with Indian Tribes* – The siting process will respect tribal sovereignty and self-determination, lands, assets, resources, and treaty and other federally recognized and reserved rights. The process will take into account siting impacts on sacred tribal lands, and other areas and resources of religious or cultural significance. (The importance of recognizing Tribes’ special trust relationship with the U.S. federal government in the siting process is discussed further in Section 5.4 of this document; siting considerations are also discussed in Chapter 6.)
- *Environmental Justice* – The process will pursue fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income. The process will also embrace environmental justice principles, and comply with federal requirements and guidance on these issues.
- *Informed Participation* – Consent is not meaningful unless it is informed. This means that the implementing organization¹⁵ will share information and provide financial and technical resources to communities as needed to enable effective participation and provide for informed decision-making.
- *Equal Treatment and Full Consideration of Impacts* – The siting process will be conducted in a manner that is considerate of parties who are or may reasonably be affected, identifies and shares information about potential impacts, and makes explicit the role of fairness and equity considerations in its decision-making.

¹⁵ Under current authority, DOE is legally responsible for implementing the waste program. The BRC recommended a new organization be created that would be dedicated solely to implementing the waste management program and empowered with the authority and resources to succeed. The Administration’s Strategy agrees with the recommendation of the BRC. DOE is prepared to maintain this function or support the transfer of this role to a new organization based on direction from Congress.

- *Community Well-being* – Communities will want to weigh the potential opportunities and risks of hosting a facility, including the social, economic, environmental, and cultural effects—both positive and negative—it may have on the community. To ensure that the siting process is fair and durable, consideration of all these impacts and benefits will be integral to the siting process.
- *Voluntariness/Right to Withdraw* – Participation in the consent-based siting process will be voluntary. Further, a community that volunteers to be considered for hosting a nuclear waste management facility will reserve the option to reconsider and withdraw itself from further participation up to the point that a binding agreement has been signed. Provisions specifying when and on what grounds agreements could be terminated or amended beyond that point could be negotiated as part of the agreement.
- *Transparency* – The siting process will be open to input throughout and transparent with respect to how decisions are made. Every effort will be made to share information and input with all participants in the process and explain how this information and input is being considered or applied.
- *Stepwise and Collaborative Decision-Making that is Objective and Science-Based* – The process will be implemented in discrete, transparent, and easily observed and evaluated steps, in consultation with the public, interested stakeholders, and affected parties. Decisions will be based on sound science and siting considerations and regulatory requirements will be applied rigorously and transparently. The siting process will recognize the value of supporting robust participation, encouraging multiple applications, and keeping options open, especially in the early phases of the siting process.

5. SITING PROCESS

5.1 Early Engagement and Outreach

In designing this draft consent-based siting process, DOE considered the input received during the yearlong effort to engage with the public and stakeholders in a national-level dialogue about consent-based siting for nuclear waste management and disposal facilities. DOE also reviewed and considered the findings and recommendations of other organizations and expert groups that have looked at the challenge of siting nuclear waste facilities, including the National Academy of Sciences, the Nuclear Waste Technical Review Board, and the BRC (among others). In addition, DOE considered international experience in this area, including consent-based siting efforts being undertaken by other governments (e.g., Canada and the United Kingdom). Specific activities and outputs from the initial public engagement phase of DOE's consent-based siting initiative include the following:

- Publishing an *Invitation for Public Comment to Inform the Design of a Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities* and hosting a series of 10 public meetings (including 8 regional meetings across the country and 2 in Washington, DC).
- Publishing *Designing a Consent-Based Siting Process: Summary of Public Input Report*, summarizing input gathered through the Invitation for Public Comment and public meetings.

- Publishing the *Draft Plan for a Defense Waste Repository* (December 2016) to solicit input on this proposed element of DOE's integrated waste management strategy.
- Continuing interactions with the National Transportation Stakeholders Forum (NTSF) and several ad hoc working groups associated with NTSF, the Transportation Core Group, state and regional groups, and the Tribal Caucus.¹⁶ In addition, DOE has continued to engage with the Nuclear Energy Tribal Working Group (NETWG).
- Discussing DOE's vision for an integrated waste management strategy at numerous venues (the *Summary of Public Input Report* contains a full list).

Copies of these documents can be found on the Department's Consent-Based Siting website at <https://energy.gov/ne/read-more-about-nuclear-waste-management>. Summaries, videos, and transcripts of the 10 consent-based siting meetings hosted in 2016 can be found at <https://energy.gov/ne/activities-and-events>.

Before turning to a discussion of specific phases and steps in DOE's proposed design for a consent-based siting process, it is worth reiterating that any consent-based process—by its nature—will have to be flexible and adaptive. Thus, DOE's aim in this draft consent-based siting process is to offer general direction and guidance in an effort to seek additional input, rather than to set out a rigid blueprint to be followed. Experience in the United States and elsewhere suggests that siting processes, especially for complex and controversial facilities, are inherently unique. That means the steps described here may not occur exactly in the sequence described and may need to be modified—in duration and/or scope—based on the particular needs of potentially interested communities and on the nature of the facility itself. Some steps may also proceed in parallel with others. For example, the development of generic repository standards by the U.S. Nuclear Regulatory Commission (NRC), the U.S. Environmental Protection Agency (EPA), and other agencies (if applicable) will take time and could occur in parallel with other preliminary repository siting efforts. As such, the timelines listed below are rough estimates based on preliminary planning assumptions and are meant only to provide a rough approximation of the amount of time it may take to complete any given phase.

It should also be recognized that while the local community is generally the most affected by any siting process, local and state government, Congressional delegations, as well as any affected Tribal governing body, will play important roles in the siting process. Therefore, the use of the term "community" in the following draft consent-based siting process should be interpreted as the broad and inclusive participation from all of these groups and not limited to the local community.

¹⁶ While these interactions focused primarily on transportation, consent-based siting was also discussed.

5.2 Draft Steps in the Siting Process

Phase I	Initiate Consent-Based Siting Process and Invite Communities to Learn More <i>Rough estimate of schedule: 1–3 years to initiate the consent-based siting process for each type of facility.</i>
Step 1	Implementing organization obtains legislative authority and funding. Initiate a consent-based siting program, with sufficient authority and funding, to collaborate with communities and stakeholders at the local, state, and tribal levels to site waste management facilities.
Step 2	Implementing organization initiates the consent-based siting process. Provide information, answer questions, and engage with the public on consent-based siting and an integrated waste management system to store and dispose of nuclear waste. Discuss consent-based siting with potentially interested communities and stakeholders, and encourage mutual learning between communities and the implementing organization. Information-sharing, open discussion, and mutual learning activities continue throughout the consent-based siting process. The NRC, EPA, and other agencies (if applicable) initiate development of generic repository standards.
Step 3	Implementing organization issues a funding opportunity for communities to learn more. Establish a federal grant program and issue a funding opportunity for communities interested in learning more about consent-based siting, nuclear waste management, siting considerations, and the role a waste management facility (or facilities) may play in the community. Additional funding opportunities may be issued in later steps of the process based on Tribal, state, community, and program needs.
Step 4	Communities express interest in learning more respond to funding opportunity. Communities respond to the funding opportunity notice indicating an initial interest in learning more about consenting to host an interim storage facility or repository. Briefings, meetings, information materials, and opportunities for open discussion are made available to communities that express interest. Communities submit grant applications.
Step 5	Implementing organization evaluates applications and awards grants. The implementing organization reviews grant applications and evaluates whether the community has the potential to play a role in an integrated waste management system. This early-stage evaluation focuses on high-level, readily detectable factors that could exclude a community from further consideration, such as proximity to major population centers, national parks, or other areas of special significance. This step relies on readily available information, such as reports of the U.S. Geological Survey, state geological agencies, academic papers, and National Laboratory-developed geologic information systems with data relevant to both surface facilities and underground repositories. The implementing organization awards grants based on criteria in the funding opportunity notice to enable communities to learn more. The implementing organization works closely with communities to encourage mutual learning, establish an open dialogue, identify potential environmental justice concerns, and support community planning efforts to assess whether a facility fits into the community’s long-term vision

	<p>and well-being, including economic benefits and challenges. This engagement with the implementing organization continues throughout the consent-based siting process.</p> <p>The NRC and EPA, and other agencies (if applicable) continue development of repository standards.</p>
Step 6	<p>Community requests preliminary assessment of site.</p> <p>The community decides whether to request a preliminary assessment to determine whether a site or sites within the community have the potential to possess the geological, geographical, and technical attributes expected for hosting a SNF and/or HLW management facility. Communities may choose to hire their own experts to help them evaluate if they wish to proceed to a preliminary assessment and continue their involvement with the siting process.</p>
Phase II	<p>Site Assessment</p> <p><i>Rough estimate of schedule: 1–2 years for interim storage facility; 2–4 years for repository.</i></p>
Step 7	<p>Implementing organization conducts preliminary site assessment.</p> <p>At the request of the community, the implementing organization conducts a preliminary site assessment. This includes site evaluation activities to assess technical concerns and feasibility, infrastructure issues, local socio-economic and environmental conditions, and potential impacts.</p> <p>The assessment begins with an extensive analysis based on the full range of existing information that can be obtained in a reasonable time. In addition to the information gathered in the first phase, data sources considered may include a more comprehensive review of literature and related studies in the public domain and the private sector (when available); various meteorological, environmental, socioeconomic, and transportation studies conducted in the affected area by federal or state agencies; and available data from existing exploratory boreholes or other existing field investigations in the region of the site.</p> <p>If this analysis identifies additional data that are necessary to support a decision to conduct a detailed site assessment in Phase III, some additional activities may be undertaken following completion of required environmental reviews, including surface investigations such as geologic mapping and geophysical surveys, compilations of satellite imagery data, aerial photography, or limited surface-disturbing work such as trenching.</p> <p>After analysis of the information collected, the implementing organization completes the assessment, shares the results with the community, and determines whether a site (or sites) within the community is eligible to be considered for a detailed site assessment. The decision-making process used to determine whether sites are suitable for a detailed assessment and the bases for the decision are discussed clearly and openly with the community.</p> <p>The NRC and EPA, and other agencies (if applicable) propose generic repository standards.</p>

Step 8	<p>Community requests detailed assessment of site.</p> <p>A community that has a site (or sites) that pass the preliminary site assessment decides whether to request a more detailed assessment to determine whether that site (or sites) has the potential to obtain a license for the construction and operation of a storage and/or disposal facility for SNF and/or HLW. The community decides whether it is interested in requesting a detailed site assessment for an interim storage facility, a disposal facility, or both. In addition, the community identifies any additional features of interest that would be important in terms of supporting community well-being.</p>
Phase III	<p>Detailed Assessment</p> <p><i>Rough estimate of schedule: 2–4 years for interim storage facility; 5–10 years for repository.</i></p>
Step 9	<p>Implement organization conducts detailed site assessment.</p> <p>The implementing organization conducts a detailed assessment of the site. Data obtained is used to develop the facility design, satisfy requirements of the National Environmental Policy Act (NEPA) and other environmental laws, and prepare licensing documentation.</p> <p>The implementing organization initiates activities to comply with NEPA, including issuing a Notice of Intent to prepare an Environmental Impact Statement where appropriate. The implementing organization and the community work together to engage potentially affected communities—at the local, tribal, and state levels—in the analysis of health, safety, environmental, social, economic, and cultural effects of the potential facility. This engagement with surrounding communities should include efforts to address environmental justice concerns, if any.</p> <p>A detailed site assessment involves data collection activities that would likely be quite extensive for a repository. Some surface-based testing, including boreholes, would likely be required to provide data related to surface facilities and operations—for both repositories and storage facilities. A repository would also require a substantial additional amount of work (referred to as site characterization in repository regulations) to establish geologic conditions and the ranges of those parameters of a particular site that are relevant for evaluating whether a repository at the site will be able to provide safe long-term isolation of the waste. This work may include subsurface investigations from boreholes, exploratory shafts, and tunnels; laboratory research; and modeling of long-term repository performance.</p> <p>The implementing organization then determines if any sites that have been the subject of a detailed site assessment are suitable for preparation of a license application for the type of facility in which the community has expressed interest. The decision-making process and bases for the decision are discussed clearly and openly with the community prior to, during, and after the assessment.</p>
Step 10	<p>Community with suitable site(s) decides whether they may be willing to host.</p> <p>If a site within the community is confirmed to be suitable in Step 9, the community decides whether to pursue the possibility of hosting a nuclear waste management facility. The decision to take this step is based on information gathered in all previous phases; considerations of community well-being and community planning; collaboration with surrounding communities at the local, state, and tribal levels; and a mutual learning process between the community and the implementing organization.</p>

Phase IV	Agreement <i>Rough estimate of schedule (note that times overlap with the prior phase): 1–2 years for interim storage facility; 2–5 years for repository.</i>
Step 11	Community offers the terms and conditions on which they would like to proceed. Following an affirmative decision to pursue hosting a facility, the community drafts and proposes the terms and conditions of an agreement with the implementing organization to host the facility. This includes what types and amounts of SNF and/or HLW the community would consent to accepting at the proposed facility, the type of facility (storage, disposal, or both) that would be considered, and under what terms and conditions.
Step 12	The community and the implementing organization negotiate and ratify an agreement. The community and the implementing organization discuss, collaborate, and negotiate to achieve a workable, durable agreement. The implementing organization and the community determine whether to enter into a formal agreement.
Step 13	The community and the implementing organization finalize the agreement. The community determines the method to be used to ratify the agreement that the community considers suitable. The implementing organization and community accept terms of the agreement, and all required parties sign. Agreement is approved by necessary parties and finalized.
Phase V	License, Construct, Operate, and Close <i>Rough estimate of schedule:</i> <i>Licensing Process: 2–3 years for interim storage facility; 3–5 years for repository</i> <i>Construction: 18–24 months for interim storage facility; 7–10 years for repository</i> <i>Operation: 40–100 years for interim storage facility; 30–150 years for repository</i>
Step 14	License facility. The implementing organization and the community work together to finalize the facility design, safety analysis, and license application for the proposed facility (or facilities). The license application is submitted to the NRC for review and decision. The NRC considers the application under the regulations applicable to the specific type of facility proposed with opportunities for involvement by other parties as provided in those regulations.
Step 15	Construct and operate the facility. Assuming receipt of the required authorization from the NRC and other agencies and in accordance with the formal agreement, the implementing organization constructs and then operates the facility. Preparation for transportation and other logistical and infrastructure steps are finalized prior to start of operation. The implementing organization continues to work collaboratively with the community to ensure commitments to the community are maintained and upheld throughout the lifetime of the facility.
Step 16	Close and decommission the facility. The implementing organization and the community work together to close and decommission the facility under the terms agreed to in the formal agreement and consistent with applicable statutory and regulatory requirements.

Step 17	Monitor the site post closure and maintain communication. The implementing organization and the community continue to monitor the site to ensure safety and protection of people and the environment. The program implementer and the community maintain open, two-way communication.
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5.3 Issues to Be Addressed Throughout the Siting Process

As the above sequence of phases and steps indicates, potential host communities and the implementing organization will confront multiple decision points where expressions of interest (early in the process) and more formal statements of consent and agreement to continue (later in the process) are needed to proceed to the next phase. Timely and frequent engagement with stakeholders will be critical to navigate each of these decision points in a way that is tailored to the local and regional contexts of potential host sites. In particular, key questions about the nature of consent and about mechanisms for registering consent will need to be discussed throughout the process, up to the point where a final agreement to move forward with a license application is signed.

In addition, the siting process will need to address a number of important issues and questions that cannot be specified in advance, but that will have to be resolved through active consultation, dialogue, and engagement between the implementing organization and affected parties, including Tribes, states, regional and local authorities, and congressional representatives. Examples of such issues include how to address the concerns and interests of neighboring states and Tribes; how to identify and engage other key stakeholders; how proposed agreements, including benefits and incentives, will be reviewed and evaluated; and what type of cooperation and/or oversight role host jurisdictions have in the development, operation, and closure/decommissioning of the proposed facility.

5.4 Key Role of Tribes and States

Many of the comments received in response to the Invitation for Public Comment to Inform the Design of a Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities stressed the central role of elected officials at the tribal or state level in consent-based siting.¹⁷ Unlike local governments, Tribes and states have recognized powers that will require special attention throughout such a process. The federal government consults with tribal governments¹⁸ and has a trust responsibility to protect tribal sovereignty and self-determination, as well as tribal lands, assets, resources, and treaty and other federally recognized and reserved rights. In general, federal Indian reservations are not subject to laws of the states in which they are located.¹⁹ In addition, Tribes retain treaty rights and tribal interests in large areas beyond reservations.

¹⁷ U.S. Department of Energy, *Designing a Consent-Based Siting Process: Summary of Public Input Final Report*, December 29, 2016, p. 11-21, 28-30.

¹⁸ The federal government's responsibilities to consult government-to-government with Tribes are found in Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (2000).

¹⁹ A federal Indian reservation is an area of land reserved for a Tribe or Tribes under treaty or other agreement with the United States, executive order, or federal statute or administrative action as permanent tribal homelands, and where the federal government holds title to the land in trust on behalf of the Tribe. For more information, see: <https://www.bia.gov/FAQs/>.

States are the fundamental building blocks of the U.S. federal system, and retain powers that are not delegated to the federal government, or prohibited to the states, by the Constitution. States are responsible for ensuring the health and safety of their citizens, and have jurisdiction over local authorities.

All major nuclear waste legislation over the past four decades has recognized the fundamental and distinct roles of Tribes and states in the U.S. federal system, and defined explicit mechanisms for involving tribal and state governments in the process of siting, constructing, and operating repositories and storage facilities. In the case of the federal government's government-to-government relationship with Indian Tribes, the siting process will follow DOE's American Indian and Alaska Natives Tribal Government Policy and implementation guidance, as well as broader federal guidance (including Executive Order 13175 concerning "Consultation and Coordination with Indian Tribal Governments").

DOE will seek to initiate and maintain communications with host Tribes and states, as well as other affected jurisdictions from the outset in accordance with relevant Executive Orders, statutes, and regulations.

6. SITING CONSIDERATIONS

6.1 The Role of Siting Considerations in a Consent-Based Siting Process

Siting considerations play a role in the early stages of the siting process by helping communities evaluate the potential suitability of sites in the community for a nuclear waste management facility and ensuring that time and resources are not invested in exploring sites that are unlikely to support the mission these facilities need to serve. As already noted in Step 5 of Phase 1 in the draft process, the implementing organization will evaluate applicants' prospective sites against broad, exclusionary factors such as proximity to major population centers, national parks, or other areas of special significance and award grants to learn more to those applicants not excluded by these factors. Of course, later steps—including the preliminary and detailed site assessments—require increasingly detailed and rigorous analysis of the total system performance at specific potential sites.

Ultimately, the safety and appropriateness of any potential site for a particular type of facility will be assessed against a number of factors, both technical and social in nature. Regulatory standards developed and enforced by an independent regulator(s) will play an essential role in protecting the public and the environment, and holding the implementer accountable. Prior to construction and operation, the Nuclear Regulatory Commission will consider the license application to determine that the facility will meet the regulatory standards established to ensure the health and safety of the public.

The specific considerations outlined below are not exhaustive and do not preclude the consideration of other factors.

6.2 Siting Considerations

Major federal actions related to a federal proposal to site, construct, operate, and ultimately close storage or disposal facilities for SNF and HLW, including associated transportation, would be subject to NEPA (42 USC 4321 et seq.), which establishes requirements for proposed major federal actions that could significantly affect the quality of the human environment. NEPA requires federal agencies to consider potential environmental consequences of and reasonable alternatives to their proposed actions. Council on Environmental Quality (CEQ) implementing regulations for NEPA (40 CFR Parts 1500-1508) and applicable agency-specific regulations, establish the requirements for involving the public in the evaluation process, including making environmental information publicly available before making a decision or taking action.²⁰ The licensing of a facility by NRC would also be subject to NEPA review.

Federal agencies must integrate other planning and environmental review procedures and consultation requirements with NEPA to the fullest extent possible, including, for example, the *Fish and Wildlife Coordination Act* (16 U.S.C. 661 et seq.), the *National Historic Preservation Act* (54 U.S.C. 300101 et seq.), the *Endangered Species Act* (16 U.S.C. 1531 et seq.), and other laws and executive orders pursuant to 40 CFR 1502.25. Through NEPA, the implementing organization would consider all potential direct, indirect, and cumulative effects of the proposed facility on the human environment, including air quality, geology and soils, land use, water resources, human health, biological resources, socioeconomics, environmental justice, and cultural resources.

Proposed nuclear waste management facilities would be subject to federal, state, local, and tribal land use protected area considerations and prohibitions. This would generally exclude from consideration land designated as part of a national park, national wildlife refuge, or wilderness area. Proximity to and effects on components of the National Parks System, the National Wildlife Refuge System, the National Wild and Scenic Rivers System, the National Wilderness Preservation System, and National Forest System, as well as proximity to or impacts on sacred tribal lands, would also be given special consideration.

Social and economic considerations are also important in siting a nuclear waste management facility, since hosting such a facility could affect a community in many ways. Ideally, a community interested in learning more about potentially hosting a facility would feel empowered to investigate options and engage its citizens in such a way that most members of the community feel this exploration was a positive experience regardless of whether they choose to proceed or withdraw. One option along these lines is to conduct a community planning, economic development, or visioning activity separate from or in parallel to investigations into the risks and benefits of hosting a facility. This exercise would help a community articulate what type of future it wants before deciding whether a proposed facility or facilities might align with or enable that vision. Such an exercise could also provide a mechanism for addressing equity and environmental justice concerns and mediating different views. With a clearer vision of its long-term objectives, a community can more easily evaluate the different outcomes of a facility, including impacts on local economic development, labor supply, transportation infrastructure, public safety infrastructure, utilities,

²⁰ In addition to CEQ regulations, the implementing organization would likely need to promulgate and comply with its own NEPA implementing regulations. For DOE, these are the *National Environmental Policy Act Implementing Procedures* promulgated at 10 CFR Part 1021.

energy, and community services, and reach a conclusion about whether those impacts align with the community's values and priorities.

6.3 Regulatory Framework for Siting Interim Storage Facilities

The U.S. Nuclear Regulatory Commission (NRC) is responsible for regulating the storage of commercial spent nuclear fuel. The regulations that will apply to a federal interim storage facility include:

- 10 CFR Part 20 – Standards for protection against radiation
- 10 CFR Part 72 – Licensing requirements for the independent storage of spent nuclear fuel, high-level radioactive waste, and reactor-related greater than class C wastes
- 10 CFR Part 73 – Physical protection of plants and materials

6.4 Regulatory Framework for Siting Geologic Repositories

EPA's 40 CFR 197 and NRC's 10 CFR 63 were developed specifically for a geologic repository at the Yucca Mountain site in Nevada, and would not apply to a repository at any site other than Yucca Mountain. EPA's 40 CFR 191 and NRC's 10 CFR 60 regulations date from the mid-1980s, but in the absence of new rulemaking, would apply to any proposed geologic repository at a site other than Yucca Mountain, Nevada.

As noted in the Administration's Strategy, "the Administration understands the need for the Environmental Protection Agency to develop a set of generic, non-site-specific, repository safety standards to gain public confidence that any future repository will protect public health and the environment. This will be an important early step in any repository siting effort." Thus, there is an expectation that the existing disposal regulations for geologic repositories (40 CFR 191 and 10 CFR 60) will be updated at a future date to reflect the evolution of regulatory thinking during and since the development of the Yucca Mountain-specific regulations (40 CFR 197 and 10 CFR 63). In issuing 10 CFR 63, the NRC stated that the more risk-informed, performance-based approach adopted therein provides a better regulatory framework for geologic disposal than the approach in 10 CFR 60. At that time, the NRC stated that the "generic Part 60 [10 CFR 60] requirements will need updating if applied to sites other than Yucca Mountain" (66 FR 55732, p. 55736). The NRC has not yet begun rulemaking to effect this update, although the NRC continues to recognize that 10 CFR 60 needs updating if applied to geologic repositories at sites other than Yucca Mountain (Rubenstone 2016).

The early phases of a siting process can be initiated based on readily available information that does not require site-disturbing activities. These early stages can also go forward in parallel with regulatory action by the EPA and NRC to develop updated regulations for a geologic repository at a site other than Yucca Mountain.

6.5 Site Assessment Considerations

As noted above, the first step of the site assessment phase will focus on a few high-level, readily detectable factors that could exclude a site from further consideration, such as proximity to major population centers, national parks, or other areas of special significance. During the next step, more

detailed, site-specific information will need to be collected. The information collected during detailed site assessment will provide greater insights into the performance of a total system at a specific site. Such information could include:

- The current and future distribution of the population near the proposed site
- The availability of sufficient surface land area to accommodate needed capacities and functions, including facilities for the transfer and storage of waste and for associated support services, as well as sufficient area around the facility to ensure that radiation doses from all pathways resulting from facility operations are within regulatory limits and there is an adequate controlled area in accordance with applicable NRC regulations
- The potential for strong near-field ground motion from historical earthquakes on large capable faults
- The potential for seismicity induced by human activities, such as explosive blasts, subsurface fluid withdrawal or addition, mining activity, or the ground loading effects of dams or reservoirs
- Surface faulting that could cause differential ground displacement that might affect proposed facility structures or operations
- Soil or bedrock conditions that have the potential to create ground movement from liquefaction, subsidence, or landslides and the potential of such conditions to adversely affect the proposed facility structures and performance
- The potential soil-bearing capacity to support foundation loading
- The potential for long-term and short-term adverse effects from floods (from surface-water bodies or surface runoff) or the need for extensive modification of floodplains in site selection and facility design
- The potential for natural phenomena or severe weather that could adversely affect the design and safe operation of the facility
- The potential for local and regional industries to affect the proposed facility's site and design
- Proximity to transportation infrastructure

In addition to the considerations above, additional site-specific factors would have to be considered when assessing a potential host site for a geologic repository. These additional factors relate to the ability of the site to provide the required, long-term isolation of high-level radioactive wastes and spent nuclear fuel after a repository has been closed and decommissioned. They include:

- *Geohydrology*— the geohydrologic setting of the site
- *Geochemistry*—the geochemical and hydrochemical conditions of the host rock
- *Rock characteristics*—the geologic and geomechanical characteristics of the site
- *Erosion*—the structure, stratigraphy, and geomorphology of the site
- *Dissolution*—the stratigraphy, structure, hydrology, and geochemistry of the site

- *Tectonics*—the tectonic setting of the site
- *Potential for future human interference*
 - *Natural resources*—presence of mineral and energy resources at the site
 - *Site ownership and control*—arrangements for the long-term ownership and control of land at the site

7. CONCLUSION AND OPPORTUNITIES FOR PROVIDING FURTHER INPUT

The draft consent-based siting process described in this document has been informed by the Department’s engagement with the public, Tribes, stakeholders, and other interested parties and by numerous other sources of information and input. Following the release of this draft document, the Department plans to continue to provide opportunities for public dialogue. Future engagements with the public, and stakeholders, as well as communities, states, and Tribes will aim to better understand, respond to, and more fully incorporate input that is reflective of expressed values and interests.

The Department welcomes public comment on the contents of this document, including comments on specific aspects of the draft process and siting steps outlined in Section 5, as well as on the siting considerations discussed in Section 6. Instructions for submitting comments are included in the Federal Register Notice accompanying this document and titled *Request for Public Comment on Draft Consent-Based Siting Process and Siting Considerations for Nuclear Waste Storage and Disposal Facilities*.

Examples of the kinds of issues and topics that the Department believes would benefit from further input and suggestions include the following:

1. What specific design elements and implementation steps should be included to ensure that the siting process, as a whole, reflects the principles discussed in Section 4 and produces outcomes consistent with those principles?
2. What provisions are needed to assure potentially interested communities of adequate opportunities for information sharing, expert assistance, and meaningful participation?
3. How can the process be improved to maximize opportunities for mutual learning and collaboration between potentially interested communities and the implementing organization?
4. How can the process ensure communities have adequate opportunity to demonstrate interest in continuing in or opting out of the siting process?
5. How can the process ensure that regional concerns and interests, including the concerns and interests of neighboring Tribes and states and any transboundary issues or impacts, are adequately addressed?
6. How can the Department best engage with local, state, regional, and tribal entities in the review of this draft siting process?
7. Are there other issues that should be considered in the siting process?

In conclusion, the Department wishes to express appreciation for the insights, suggestions, and feedback that many individuals and organizations have already provided to inform this effort. The Department looks forward to continuing an active dialogue with all stakeholders and interested communities, Tribes, and states as it seeks to refine and implement a new approach to siting that—by reflecting the best expertise and core values of a broad cross-section of participants—offers real promise for producing safe, durable, and widely accepted solutions to our nation’s nuclear waste challenges.



Draft Plan for a Defense Waste Repository

December 2016

DRAFT

Foreword

In March 2015, the President found that “the development of a repository for the disposal of high-level radioactive waste (HLW) resulting from atomic energy defense activities only is required” in a *Presidential Memorandum for the Secretary of Energy* (Obama 2015). The presidential finding was accompanied by a March 2015 U.S. Department of Energy (DOE) *Report on Separate Disposal of Defense High-Level Radioactive Waste* (DOE 2015), which concluded that “the Secretary may develop a Defense HLW Repository under his Atomic Energy Act of 1954 authority. In developing a Defense HLW Repository, the Secretary would be subject to U.S. Nuclear Regulatory Commission (NRC) licensing authority, but would not be subject to the Nuclear Waste Policy Act’s (NWP) siting provisions, apart from the State and tribal participation provisions specified in Section 101 of the NWP” (DOE 2015, p. 2).

Consistent with the Administration’s *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* (DOE 2013), the DOE is considering options for establishing an integrated waste management system (IWMS). The IWMS will consist of facilities and other key infrastructure needed to safely manage both spent nuclear fuel (SNF) and high-level radioactive waste (HLW) from commercial electricity generation, research, and atomic energy defense activities. Over the past year and a half, the DOE has begun early planning to identify various activities that need to be performed to evaluate and design a separate repository for defense waste. In this draft plan “defense waste” refers to all or a portion of the high level radioactive waste and spent nuclear fuel derived from atomic energy defense activities and research and development (R&D) activities of the DOE. Going forward, DOE will continue to assess the feasibility of disposing non-defense DOE R&D nuclear waste in a defense repository, cost shared proportionately from defense and non-defense funding sources. Although the plan is preliminary, it begins to describe the different components—including technical, regulatory, risk management, cost and schedule considerations—that need to come together to build a viable program, all within the framework of a consent-based siting process. It is now appropriate to share the progress made on this preliminary plan and ask the public for their review and feedback. To accomplish this, the draft plan is being released for public comment. Ultimately, the defense waste repository plan would provide meaningful information to any community interested in learning more about what it would take to host such a facility.

This draft plan describes a path for development of a Defense Waste Repository (DWR) for the permanent disposal of all or a portion of defense waste. Specifically, this plan documents the activities needed to implement disposal of these wastes consistent with the DOE’s existing authority under the Atomic Energy Act of 1954 (AEA), and consistent with the requirements of the Nuclear Waste Policy Act of 1982, as amended (NWP). The plan is independent of facility location and disposal medium (e.g., crystalline rocks, bedded salt, clay/shale, or other sedimentary rocks). This draft plan emphasizes the use of a phased approach to development, within the context of a consent-based siting process. Although this plan intends to conform to a consent-based siting process, it does not include a full description of the process. The draft design document describing a consent based siting process is expected to be released for public comment in December 2016.

This draft plan builds upon existing plans and acknowledges commitments and requirements where applicable. The activities described focus primarily on technical issues regarding the development of a disposal capability rather than programmatic or regulatory constraints. This draft plan has been prepared to solicit public views on the topic and initiate discussion with interested parties, and may change based

on comments received in response to this draft plan and other elements of the IWMS. This draft plan may also change if legislation, regulations and policy change.

Executive Summary

Overview

Consistent with the Administration's *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste (Strategy)* (DOE 2013), the U.S. Department of Energy (DOE) is considering options for establishing an integrated waste management system (IWMS). The IWMS will consist of facilities and other key infrastructure needed to safely manage both spent nuclear fuel (SNF) and high-level radioactive waste (HLW) from commercial electricity generation, research, and national defense activities. This plan describes a path for development of a Defense Waste Repository (DWR)¹ for the permanent disposal of all or a portion of the HLW and SNF derived from atomic energy defense activities, research and development (R&D) activities of the DOE, or both; these materials are referred to in this plan as "defense waste." Specifically, this plan documents the activities needed to develop a DWR for disposal of the defense waste consistent with the DOE's existing authority under the Atomic Energy Act of 1954 (AEA), and consistent with the requirements of the Nuclear Waste Policy Act of 1982, as amended (NWPA). This draft plan emphasizes the use of a phased approach to development, within the context of a consent-based siting process. The *Strategy* calls for "a phased, adaptive, and consent-based approach to siting and implementing a comprehensive management and disposal system" for nuclear waste. Although this plan conforms to the overall approach of a consent-based siting process, it is not intended to define the process. The draft *Consent-Based Siting (CBS) Process Design Document* provides a more complete description of the process; it is expected to be released in December 2016.

DOE views the development of a DWR as part of a larger strategy for the storage and ultimate permanent disposal of all of the nation's HLW and SNF, including HLW and SNF of commercial origin. The activities outlined in this draft plan would be conducted in the context of existing legislation, regulations and policies as described in Section 2. This plan acknowledges existing plans, commitments, and requirements where applicable, but the activities described herein are based on those necessary for development of a disposal capability based primarily on technical, rather than programmatic or regulatory constraints.

The principal elements relevant to development of a DWR and considered in this draft plan are:

- The proposed DWR siting process, preliminary summary schedule, and preliminary estimates of representative costs
- The types and quantities of HLW and SNF that have been identified as candidates for disposal in a DWR
- The transportation of the wastes from their current locations to the DWR
- The characteristics of the DWR for permanent disposal of the wastes

This draft plan is a snapshot of an evolving process. It projects the principal activities that need to occur, but cannot predict the timing or fashion in which they will occur. This is inherent in the nature of a

¹ Defense Waste Repository—a deep geologic repository developed by the DOE under the Atomic Energy Act for the disposal of all or a portion of the HLW and SNF resulting from atomic energy defense activities, R&D activities of the DOE, or both.

flexible, phased, and consent-based process. Note that in the context of DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, the project that is the subject of this plan has not met the CD-0 (Approve Mission Need) threshold. This draft plan is being published to solicit public views on the topic, and may change based on events or comments received in response to this draft plan and other elements of the IWMS. This draft plan may also change if legislation, regulations and policy change.

Neither the NWPA nor the AEA fully specify a process for locating, evaluating, and selecting sites for a DWR. The Blue Ribbon Commission on America's Nuclear Future (BRC) identified the importance of a workable siting process for radioactive waste facilities in general, and stated that the future siting process that will be most likely to succeed must be: "consent-based—in the sense that affected communities have an opportunity to decide whether to accept facility siting decisions and retain significant local control" (BRC 2012, pp. 47–48). The Administration's Strategy (DOE 2013, p. 9) endorses the proposition that prospective host jurisdictions be recognized as partners and identifies the establishment of a consent-based siting process as one of the critical elements for successful implementation of the strategy.

Preliminary Schedule

A preliminary schedule is discussed in Section 3.3, which shows key milestones assumed for this plan including: initiation of the development of a consent-based siting process, identification of sites for evaluation, selection of a site for characterization, submittal of a license application to the NRC seeking authorization to construct the DWR, and initiation of disposal operations. This indicates that a DWR could be available about a decade earlier than a common repository. Anticipated timeframes are included for an example scenario. Although the DOE believes that the schedule outlined in Section 3.3 is achievable, it recognizes that multiple factors could contribute to the risk that specific milestones might not be met, and that failure to meet intermediate milestones could lead to corresponding delays in subsequent milestones.

Significant risks are listed below, (risks are further described and enumerated in Section 3.5):

- Initial requests for expressions of interest fail to identify potential host communities
- Failure to negotiate mutually acceptable consent agreement with community at selected site
- No sites found suitable after screening is complete
- Site characterization finds the site unsuitable
- NRC denies license for construction
- NRC denies disposal license
- Legal challenges, which could occur at any stage of the process, many of which could result in failure of the effort if successful.

Preliminary Cost Estimate

Costs in the early stages of repository development (site identification and site screening/selection) are likely to be relatively independent of the host rock type eventually selected, but will be strongly influenced by schedule and programmatic uncertainties. Section 3.4 includes a ROM cost and schedule estimate for an example scenario that includes site identification, screening and characterization to

evaluate site suitability. To calculate a more reliable and complete cost we need to know the geology, location, and waste quantities and forms. These inputs will not become available until potential, volunteer host communities have been identified through the consent-based siting process.

In October 2014, the DOE published a report titled, *Assessment of Disposal Options for DOE-Managed High-Level Radioactive Waste and Spent Nuclear Fuel* that shared rough order-of magnitude (ROM) cost estimates for a separate repository for DOE managed HLW and SNF for design, construction, startup, operations, closure and monitoring; the estimates did not include the up front site identification and screening process.

The broad range of uncertainty for the ROM cost estimates results from multiple sources, including uncertainty regarding the site selection process, the host rock type selected for the DWR (e.g., crystalline rocks, bedded salt, clay/shale, or other sedimentary rocks), the inventory of waste selected for disposal, and the final design of the DWR. The largest contributor to cost is the construction and operation of the DWR, and the largest source of uncertainty in the total life-cycle cost of the repository is associated with the selection of the geologic media and consequent decisions about repository design and waste packaging.

Preliminary Inventory

A DWR may be used only for the disposal of defense waste, i.e. HLW and SNF resulting from atomic energy defense activities and/or, potentially, DOE R&D activities. HLW and SNF of commercial origin are not candidates for disposal in this repository. Not all wastes are available today in their final form for disposal, and, as described in Section 3.6, disposal operations are assumed to proceed in phases.

Identification of a waste type here as a candidate for disposal in the DWR does not preclude consideration of other disposal options, including emplacement in a repository sited and developed under the process set forth in the NWPA (i.e., an NWPA Repository), which may be used for disposal of commercial-origin HLW and SNF. Table 2 summarizes the volumes of the various wastes in the forms currently projected for disposal, estimated as of 2048.

Primary Technical Activities

The primary technical activities that must be completed to implement the plan are listed below and further described in Section 4:

- Site Identification
- Site Screening/Selection
- Site Characterization
- Waste Characterization
- Repository Design
- Licensing
- Evaluation of System Performance
- Repository Construction

- Waste Transportation
- Repository Operations
- Repository Closure
- License Termination

The National Environmental Policy Act (NEPA) will require the DOE to prepare an Environmental Impact Statement (EIS) (10 CFR 1021 Subpart D, Appendix D, D10), as is the case for an NWPA repository.² Preparation of an EIS would begin at the time that a site is selected for detailed characterization, and would include evaluation of reasonable alternatives. DOE is currently developing a preliminary NEPA strategy that will take into consideration comments received in response to this draft plan and through the consent-based siting process.

For the purposes of this draft plan, the DOE assumes that repository development can be initiated under the existing generic regulations that apply to geologic repositories at sites other than Yucca Mountain (YM) (EPA's 40 CFR 191 and NRC's 10 CFR 60), as discussed in Section 2.6. However, at the appropriate time in the IWMS process, DOE will request that regulators provide revised standards to support repository development.

The DOE will engage with a broad range of governmental entities and other parties interested in the DWR during development and implementation of the siting process and subsequent operation and eventual decommissioning of the repository (Section 6). These stakeholders include but are not limited to governmental bodies in jurisdictions in which the wastes are currently stored and jurisdictions potentially affected by transportation; organizations of tribal, state, and local governments; and stakeholder groups interested in radioactive waste management. These efforts will build on the existing relationships that the DOE maintains with a wide range of stakeholders.

This plan assumes that the DOE will have overall responsibility for developing the detailed plans necessary to implement the plan described and will be responsible for directing and managing all work activities. The DOE will be the licensee under applicable NRC regulations and will be responsible for meeting all legal and regulatory requirements. Successful implementation of this plan will require support activities in multiple areas.

² Note, however, that NWPA EIS provisions (e.g., NWPA Section 112) do not apply to a DWR.

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Acronyms and Abbreviations

AEA	Atomic Energy Act of 1954, as amended
ASME	American Society of Mechanical Engineers
BRC	Blue Ribbon Commission on America's Nuclear Future
CEQ	Council on Environmental Quality, Executive Office of the President
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
DOE	U.S. Department of Energy
DWR	Defense Waste Repository
EIS	Environmental Impact Statement
EMT	Electrometallurgical Treatment
EPA	U.S. Environmental Protection Agency
FFCA	Federal Facility Compliance Act of 1992
FRG	Federal Republic of Germany
HIP	Hot Isostatic Pressing
HLW	High-Level Radioactive Waste
IWMS	Integrated Waste Management System
INL	Idaho National Laboratory
MTHM	metric tons of heavy metal
NEPA	National Environmental Policy Act
NRC	U.S. Nuclear Regulatory Commission
NWMO	Nuclear Waste Management Organization (Canada)
NWPA	Nuclear Waste Policy Act of 1982, as amended
QA	Quality Assurance
R&D	Research and Development
RCRA	Resource Conservation and Recovery Act
ROM	Rough Order of Magnitude
SNF	Spent Nuclear Fuel
SRG	State Regional Groups
SRS	Savannah River Site
TRU	Transuranic
WTP	Waste Treatment & Immobilization Plant at Hanford
YM	Yucca Mountain

1 Need for a Defense Waste Repository

In March 2015 the President found that “the development of a repository for the disposal of high-level radioactive waste resulting from atomic energy defense activities only is required” in a Presidential Memorandum for the Secretary of Energy (Obama 2015). The presidential finding was accompanied by a March 2015 DOE *Report on Separate Disposal of Defense High-Level Radioactive Waste* (DOE 2015), which concluded that “the Secretary may develop a Defense HLW Repository under his Atomic Energy Act of 1954 authority. In developing a Defense HLW Repository, the Secretary would be subject to U.S. Nuclear Regulatory Commission (NRC) licensing authority, but would not be subject to the NWPA’s siting provisions, apart from the State and tribal participation provisions specified in Section 101 of the NWPA” (DOE 2015, p. 2).

Additional support for the DOE’s 2015 report was provided in a 2014 DOE *Assessment of Disposal Options for DOE-Managed High-Level Radioactive Waste and Spent Fuel* (DOE 2014) that evaluated technical options for the permanent disposal of HLW and SNF managed by the DOE.³ Specifically, the 2014 report considered whether DOE-managed HLW and SNF should be disposed of with commercial SNF and HLW in one geologic repository or whether there were advantages to developing separate geologic disposal pathways for some DOE-managed HLW and SNF. The 2014 DOE report (DOE 2014, p. ES-1) recommended that “DOE pursue options for disposal of DOE-managed HLW from defense activities and some thermally cooler DOE-managed SNF, potentially including cooler naval SNF, separately from disposal of commercial SNF and HLW. Other DOE-managed HLW and SNF, including HLW and SNF of commercial origin and naval SNF with relatively higher heat output, would be disposed of with commercial SNF and HLW. This report also recommend[ed] that DOE retain the flexibility to consider options for disposal of smaller DOE-managed waste forms in deep boreholes rather than in a mined geologic repository.”

The Administration’s 2013 *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* (DOE 2013) and subsequent documents (DOE 2014 and DOE 2015) endorse a phased, adaptive, and consent-based approach to implement a flexible waste management system incrementally to ensure safe and secure operations, gain trust among stakeholders, and adapt operations based on lessons learned (DOE 2013). On December 23, 2015, the DOE issued an *Invitation for Public Comment to Inform the Design of a Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities* (80 FR 79872) in the Federal Register, thereby initiating the development of its consent-based siting process. During 2016, the DOE conducted a series of public meetings with stakeholders and communities around the country to seek feedback and inform future efforts. This feedback has been documented in the draft Summary of Public Input Report that was released for public comment in September 2016; the final version is scheduled for publication in December 2016. A draft *Consent-Based Siting (CBS) Process Design Document* will also be published for public comment. The CBS process design document reflects input gathered and offers preliminary views on siting guidelines and criteria.

³ DOE-managed HLW and SNF consists of two principal waste streams: (1) HLW, mostly resulting from atomic energy defense activities but also including a small amount of HLW of commercial origin; and (2) SNF, primarily from atomic energy defense activities (weapons plutonium production reactors and naval propulsion reactors), but also including a smaller amount of SNF from DOE R&D activities and some DOE-managed SNF from commercial sources (DOE 2014).

2 Legislative Authority and Regulatory Framework

This section of the draft plan describes the DOE's authority under existing laws and regulations to develop a DWR, using a consent-based siting process that is consistent with the requirements of the NWPA. The DOE's actions under this plan would be subject to a number of statutes, regulations, and DOE Orders and would be influenced by several existing agreements, some of which are briefly discussed below.

2.1 Atomic Energy Act

As noted in Section 1, the DOE concluded in March 2015 that "the Secretary may develop a Defense HLW Repository under his Atomic Energy Act of 1954 authority." In developing a Defense HLW Repository, the Secretary would be subject to U.S. Nuclear Regulatory Commission (NRC) licensing authority, but would not be subject to the NWPA's siting provisions, apart from the State and tribal participation provisions specified in Section 101 of the NWPA (DOE 2015, p. 2). These conclusions derive, in part, from Section 91(a)(3) of the AEA, which expressly provides the Secretary with the authority to "provide for safe storage, processing, transportation, and disposal of ... radioactive waste... resulting from" defense activities. The Department's organic legislation reaffirms the Secretary's authority to dispose of nuclear waste. In particular, Section 203(a)(8)(C) of the Department of Energy Organization Act clarifies that the DOE has authority under the AEA to "establish ... temporary and permanent facilities for storage, management, and ultimate disposal of nuclear wastes." A DWR would be subject to NRC licensing and the state and tribal participation provisions of Section 101 of the NWPA but not the other provisions of the NWPA.

2.2 National Environmental Policy Act

NEPA requires federal agencies to consider the environmental consequences of their proposed actions and reasonable alternatives before making decisions through a transparent and inclusive public impact evaluation process. Because a DWR would be sited outside the context of most portions of the NWPA, the provisions of the NWPA that establish NEPA requirements for a repository would not apply. NEPA will therefore be conducted pursuant to Council on Environmental Quality (CEQ) and DOE implementing regulations (40 CFR Parts 1500–1508 and 10 CFR 1021, respectively). DOE's regulations require the preparation of an EIS for siting, construction, operation and decommissioning of disposal facilities, including a geologic repository, for high-level waste and spent nuclear fuel (10 CFR 1021 Subpart D, Appendix D, D10). In planning for future NEPA activities, the DOE is developing a preliminary strategy that will take into consideration comments received in response to this draft plan and through the consent-based siting process.

2.3 Resource Conservation and Recovery Act

Some HLW that may be considered for disposal in a DWR is mixed waste in that, in addition to its radioactive constituents, it exhibits one or more hazardous waste characteristics or contains one or more listed hazardous wastes regulated under the Resource Conservation and Recovery Act (RCRA). The DOE has significant experience with state regulatory authority over the hazardous waste aspects of its cleanup mission through its compliance with RCRA. In addition, the Federal Facility Compliance Act of 1992 (FFCA) requires the DOE to develop waste treatment plans for its sites that contain mixed wastes. The DOE and state regulators work together in establishing Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and RCRA on-site disposal cells at many of the sites across the DOE complex. Consistent with this experience, mixed waste could be disposed of in a DWR.

2.4 DOE Orders

For the purposes of this draft plan, the DOE assumes that a DWR will be planned, constructed, and operated consistent with the requirements of DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, and other applicable DOE Orders.

2.5 Consent Orders and Certain Agreements

As described below, enforceable consent orders and certain agreements between the DOE and states that host DOE facilities require the DOE's Office of Environmental Management to achieve cleanup objectives by specific dates, and expose the DOE to substantial fines and penalties if it fails to meet the terms of the orders or agreements.

The principal orders and agreements relevant to this draft plan are listed below. Only the Idaho and Colorado agreements establish schedules for removal of SNF; no state agreement sets a date for removing HLW.

- **Idaho Settlement Agreement.** The Idaho Settlement Agreement, executed in 1995 and amended in 2008, establishes 2035 as the deadline for the treatment of all HLW and the removal of all SNF from the State of Idaho, with the exception of a working volume of 9 metric tons of heavy metal (MTHM) of naval SNF. The Idaho agreement provides that unless all covered SNF is removed by January 1, 2035 the federal government shall pay the State \$60,000 for each day such requirement has not been met, subject to the availability of the appropriations provided in advance for this purpose.
- **Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement).** The 1989 Tri-Party Agreement at Hanford, involving DOE, EPA, and the State of Washington, addresses vitrifying the HLW stored in tanks at the Hanford Site and closure of the tanks. The Tri-Party Agreement also requires DOE to develop a disposition plan for the cesium and strontium capsules stored at the Hanford Site. In 2010, the Department entered into a Consent Decree with the State of Washington requiring hot start of the Waste Treatment and Immobilization Plant (WTP) by December 31, 2019. Over the last 3-4 years, the Department has notified the State of Washington that a serious schedule risk had arisen and that it may be unable to meet milestones under the Consent Decree. On October 3, 2014, the Department and the State of Washington each filed separate motions to amend this Consent Decree (DOE 2015). On March 11, 2016, the court ordered that the Consent Decree between the Department of Energy and the State of Washington be modified so that "DOE shall achieve "Hot Start of Waste Treatment Plant" by December 31, 2033, and achieve "initial plant operations" of the WTP no later than December 31, 2036" (Moniz v. State of Washington 2016).
- **Savannah River Site (SRS).** The 1993 Federal Facility Agreement for the SRS and the SRS Treatment Plan of 1995 between the DOE and the South Carolina Department of Health and Environmental Control focus on completing the DOE's closure of tanks that store liquid waste and solidifying its HLW for safer storage.
- **Fort St. Vrain Site.** In 1996, Colorado signed an agreement with the DOE, the "Agreement between the Department of Energy and the State of Colorado Regarding Shipping Spent Fuel

Out of Colorado.” The agreement states that the DOE is committed to shipping its SNF stored at Fort St. Vrain out of Colorado by January 1, 2035.

2.6 Regulatory Framework for Geologic Repositories

There are two existing sets of federal regulations in the U.S. that govern permanent disposal of HLW. Consistent with the legal framework defined in the NWPAA, each set includes overall safety standards set by the EPA and implementing criteria defined by the NRC. One set, EPA’s 40 CFR 197 and NRC’s 10 CFR 63, was written in the last twenty years specifically for the proposed YM repository, and does not apply to any other disposal concept. The other set, EPA’s 40 CFR 191 and NRC’s 10 CFR 60, date from the middle 1980s, prior to the decision to focus solely on YM, and, in the absence of new rule-making, would still apply to any disposal concept other than YM.

For the purposes of this draft plan, the DOE assumes that the DWR effort can be initiated under the existing generic disposal regulations (40 CFR 191 and 10 CFR 60), and that disposal regulations will be updated at some future date to reflect the evolution of regulatory thinking during development of the YM specific regulations (40 CFR 197 and 10 CFR 63). In issuing 10 CFR 63, NRC stated that the more risk-informed, performance-based approach adopted therein provides a better regulatory framework for geologic disposal of HLW and SNF than the approach in 10 CFR 60. At that time, NRC stated that the “generic Part 60 [10 CFR 60] requirements will need updating if applied to sites other than Yucca Mountain” (66 FR 55732, p. 55736; see also DOE 2015, p. 15). As of 2012, NRC had “not yet begun rulemaking to effect this update” (Rubenstone 2012). NRC continues to recognize that the rule needs updating if applied to sites other than Yucca Mountain (Rubenstone 2016). Although the DOE recognizes that early interaction with the regulators on this subject would be helpful, it notes, that the early stages of a siting process are independent of the final regulatory standards, and this plan therefore assumes that the process can go forward in parallel with regulatory actions undertaken by the EPA and NRC. As the DWR plan and associated timeline mature, DOE will determine when revised standards are needed and will communicate those needs to EPA and NRC.

3 Plan and Strategy

The need for a separate DWR, as described in Section 1, contributes to the DOE's current strategy for an IWMS. This plan addresses development of a DWR as part of the DOE's overall strategy to transport, store, and dispose of the nation's SNF and high-level radioactive waste. Specifically, this plan describes activities needed to implement a plan for permanent disposal of the subject wastes within the DOE's existing authority under the AEA, using a phased and adaptive approach for implementation and a consent-based siting process, consistent with the applicable requirements of the NWPA.

The principal elements of the draft plan considered here are:

- The DWR siting process
- Phased implementation for DWR development
- Summary schedule
- Estimated costs
- General risks
- The types and quantities of waste that have been identified as candidates for disposal
- Activities to implement this plan.

Each of these elements is discussed in the following sections of the plan.

3.1 Siting Process

For the purposes of this draft plan, siting a DWR pursuant to the DOE's AEA authority is assumed to be done using a consent-based approach, consistent with the Administration's 2013 Strategy (DOE 2013). As specified in Section 101 of the NWPA, siting must follow the participation provisions of the NWPA Sections 115–118. These provisions (discussed further below) are compatible with a consent-based approach.

One of the initial steps assumed for the implementation of this plan will be to develop a consent-based siting process for a DWR. A draft *Consent-Based Siting Process Design Document* is scheduled to be published for public comment in December 2016. This draft document reflects input gathered and offers preliminary views on siting guidelines and criteria.

Phases in the technical evaluation of sites are assumed to be:

- Identification of sites for evaluation
- A screening phase in which sites are evaluated using available information to the maximum extent possible, to determine whether they are sufficiently promising for further consideration
- A longer and more extensive site characterization phase involving both surface based and underground tests to determine whether the site is suitable for a repository and provide the data needed to support repository design, licensing, and construction.

For the purposes of this draft plan, the DOE assumes that the process will include the following features:

- Multiple opportunities for dialogue with and feedback from stakeholders during the design and implementation of the siting process.
- A request for expressions of interest from communities with potentially suitable sites early in the siting process (BRC 2012, p. 53), “while also allowing for the waste management organization to approach communities that it believes can meet the siting requirements” (DOE 2013, p. 3).
- Opportunities for potentially interested host communities to obtain grants to support their acquisition of sufficient knowledge of the implications of hosting a DWR and allow them to evaluate their interest in going further. Provisions of the NWPA applicable to a DWR already authorize funding to states, Tribes, and affected local governments during the site characterization phase and possibly as soon as a site has been identified as potentially acceptable. A program for providing grants to potentially interested host jurisdictions at the initial phase of site exploration, similar to the one previously established under the NWPA to support the efforts of the U.S. Nuclear Waste Negotiator to find a host for a storage facility, may also be used.
- Negotiated Consultation and Cooperation agreements between the DOE and participating states and Tribes during the site characterization phase, and possibly as soon as a site has been identified as potentially acceptable, are contemplated by the NWPA Section 117. As discussed in more detail in Section 6.1, one of the provisions of the NWPA that will apply to a DWR requires the DOE, during site characterization and subsequent repository development and operation, to consult and cooperate with the Governor and legislature of the host state and the governing body of any affected Indian tribe “in an effort to resolve the concerns of such State and any affected Indian tribe regarding the public health and safety, environmental, and economic impacts of any such repository” (NWPA Section 117(b)).

3.2 Phased Implementation for DWR Development

The phased (staged) development strategy assumed for this draft plan focuses on achieving initial operation of a DWR using that portion of the inventory that is ready for disposal at the time the DWR can receive waste and that presents the fewest technical and regulatory challenges, which is expected to be the existing defense HLW glass and cooler DOE-managed SNF.

As shown previously (DOE 2014), all of the defense HLW and much of the DOE-managed SNF could be emplaced in a wide range of repository concepts without further aging or thermal load management considerations. The planned and existing canisters for defense HLW and much of the DOE-managed SNF described in Section 3.6 are compatible in size with any mined repository concept under consideration, including those that rely on hoists in vertical shafts for access to the underground. No significant technological advances are necessary to support a repository design and license application for a repository for this HLW and SNF. Furthermore, the development of a safety case for a DWR could be simplified by the lower thermal output and overall lower radioactivity of the HLW and SNF (as compared to commercial SNF, for example), and by the very low potential for criticality in the defense HLW because of the recovery and removal of fissile material during reprocessing (DOE 2014).

The key initial steps in detailed planning for phased DWR development include:

- Development of design concepts that facilitate phased development of the DWR, with the capability to receive the simplest waste forms as soon as possible. Additional waste forms—higher thermal loads, different dimensions—would be accepted as annual disposal capacity, technical developments, or disposal needs evolve (with consent of the host Tribe/state/community and regulatory approval from the NRC).
- Development of operational scenarios that link the stages and schedules for deployment of the DWR in phases to the anticipated timing of availability of current and potential new waste forms and packages for disposal.
- Development of a licensing strategy for phased DWR development under existing NRC generic repository regulations and identification of regulatory modifications that could facilitate such development including possible regulatory interactions about updates of the regulations.
- Early development of preliminary waste acceptance criteria, consistent with the above bullets, to support packaging needs, treatment options, and other considerations important to the waste generators.

As discussed further in Section 3.6, a significant amount of defense HLW already exists in its final form. N-Reactor (plutonium production) SNF at Hanford has been packaged in multicarrier overpacks and is in dry storage until a repository is available. Much of the remaining DOE-managed SNF will be packaged in canisters for disposal. Packaging of such DOE-managed SNF into standard canisters could begin before a DWR is available, based on preliminary acceptance criteria. Existing and projected HLW canisters and the standard canisters for relevant DOE-managed SNF are of a size that are transportable by truck if needed to allow disposal to begin as soon as possible. Existing and projected naval SNF canisters are transportable using available railcars.

Much of the potential inventory for the DWR, however, has not yet been placed into a final form for disposal (DOE 2014), and might be suitable for different waste forms and disposal approaches than assumed to date. Current plans for some waste forms date from the early 1980s, when much less was known about the capabilities of repositories to isolate radioactive material. Depending on the characteristics of the selected DWR site and future developments with respect to waste treatment options, additional HLW waste forms other than those currently anticipated could be considered in a later phase of DWR development.

This draft plan also recognizes that, as discussed below, there could be significant benefits in terms of reducing the total number of waste packages and simplifying operations if larger, higher-thermal-load packages can be shown to be disposable at the DWR after initial operation has begun. Such packages could be used in a subsequent phase of operations, with consent of the host Tribe/state/community and appropriate regulatory approval.

3.3 Preliminary Schedule

Based on the assumptions made for this draft plan, first disposal of defense waste could occur about 22 years after the consent-based siting process has been initiated. A preliminary schedule in Figure 1 shows key milestones in the draft plan including identification of site(s) for a period of three years, selection of a

site for characterization after three additional years, and submittal of a license application to the NRC seeking authorization to construct the DWR.

Four main phases of the development of the DWR prior to beginning disposal operations are reflected in Figure 1 and described as follows:

- **Site Identification.** This is the early phase in which potential candidates identified through the consent-based process are evaluated based on preliminary information. Site Identification ends with the selection of a subset of sites for full screening evaluations. In this example, it is assumed that two sites are selected for screening.
- **Site Screening and Selection.** Thorough screening evaluations would be conducted for a limited number of sites, allowing the selection of one or more sites for detailed subsurface site characterization. In this example schedule, site screening ends with the selection of a single site for characterization and subsequent licensing.
- **Site Characterization.** Subsurface investigations from boreholes, exploratory shafts, and tunnels, laboratory research, and modeling provide the necessary information to support detailed repository design and the preparation of an EIS. Assuming the site is found suitable, site characterization ends when a license application seeking authorization to construct the facility is submitted to the NRC.
- **Licensing and Construction.** License review and hearings are assumed to take three to four years. DWR construction cannot begin until after NRC has issued a construction authorization. Receipt and disposal of radioactive waste will require a license to receive and possess waste to begin disposal operations.

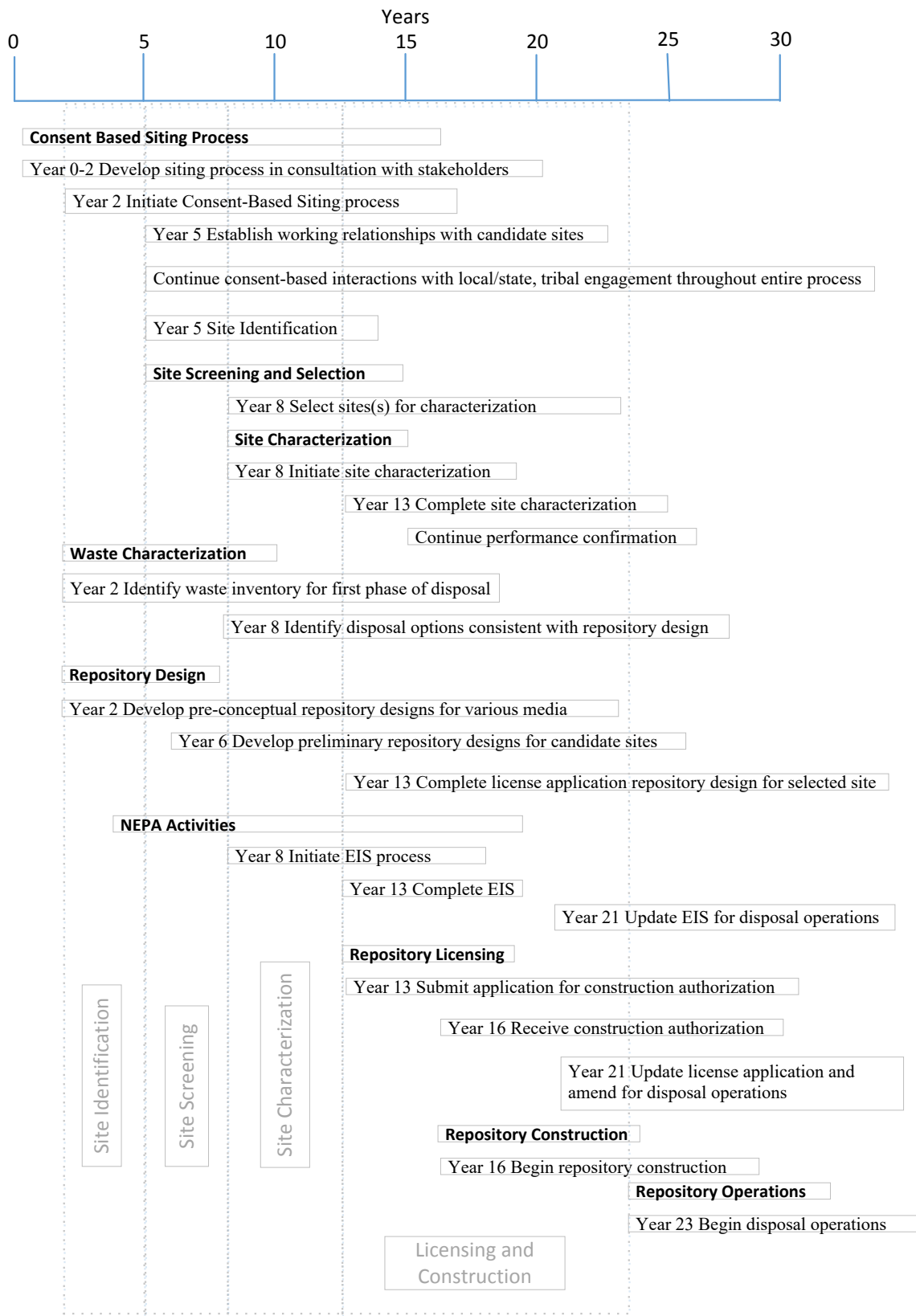


Figure 1 Preliminary Schedule for the Development of a DWR

3.4 Preliminary Project Cost Estimate

Recent ROM estimates of repository costs in the U.S. (e.g., as reported in the *Assessment of Disposal Options for DOE-Managed High-Level Radioactive Waste and Spent Nuclear Fuel* (DOE 2014)) indicate a range of costs for a DWR depending on the host geologic media and the types of waste that are included in the disposal inventory.

To calculate a more reliable and complete cost, the geology, location, and waste quantities and forms need to be better defined. These inputs will not become available until a potential host community volunteers through the consent-based siting process. Table 1 shows a ROM estimate for an example scenario to better understand what resources would be needed to identify and screen potential sites and perform the needed characterization to evaluate site suitability. This cost estimate is independent of geology.

Table 1. Preliminary ROM estimate of program costs from inception to site characterization for a representative case in which two candidate sites are identified for screening and only one site is chosen for full characterization (Millions of Dollars)

DURATION	3 YEARS	3 YEARS	5 YEARS	11 YEARS
PROGRAM PHASE	Site Identification	Site Screening	Site Characterization	TOTAL
Consent-Based Siting Process	\$45 M	\$45 M	\$300 M	\$390 M
Site Screening and Selection	\$45 M	\$400 M	\$10 M	\$455 M
Site Characterization	\$0 M	\$50 M	\$600 M	\$650 M
Waste Characterization	\$6 M	\$10 M	\$35 M	\$51 M
Repository Design	\$4 M	\$30 M	\$275 M	\$309 M
National Environmental Policy Act (NEPA) Activities	\$10 M	\$15 M	\$100 M	\$125 M
Repository Licensing	\$5 M	\$15 M	\$100 M	\$120 M
Repository Construction	\$0 M	\$0 M	\$730 M	\$730 M
Management Support	\$15 M	\$70 M	\$150 M	\$235 M
TOTAL	\$130 M	\$635 M	\$2300 M	\$3065 M

Uncertainty associated with cost estimates for the early years of DWR development is also large, and is primarily associated with the implementation of the siting process. Costs in the early years will increase with the number of initial sites and the number of sites carried forward at each step in the process. As discussed in Appendix A, Section A-1, Table 1 shows a preliminary ROM estimate of program costs from inception through site characterization. This estimate is made for a single representative case in which it is assumed that there are two candidate sites identified and that only a single site is selected for full characterization. Because the actual number of sites that may be identified and screened is unknown, costs associated with the siting process are shown as single values rather than as a range; these costs can be assumed to increase with the number of sites under consideration. Because costs associated with the consent-based siting process and site screening, selection, and characterization dominate the total costs during the first decade, costs of other aspects of the program are also shown as single values; in actuality, these costs are also uncertain and estimates shown here will need to be refined and updated as more information becomes available. Note that to a first approximation, cost estimates shown in Table 1 can be interpreted as being independent of the final choice of geologic media and repository design because the largest source of uncertainty during this period will be associated with the siting process itself rather than the construction and operation of the repository.

3.5 Risk Management

Although the DOE believes that the schedule outlined in Section 3.3 is achievable, it recognizes that multiple factors could contribute to the risk that specific milestones might not be met, and that failure to meet intermediate milestones could lead to corresponding delays in subsequent milestones. As shown in Figure 2 and discussed in the following sections, the primary risks can be grouped into broad categories that are mapped to the primary components of the schedule. Some risks will be relevant early in the process, while others will not become factors until later in the development of the DWR. All risks identified in Figure 2 have the potential to impact both cost and schedule of the proposed activities. Risks shown in red have the potential, should they be realized, to lead to abandoning or restarting the effort. Risks associated with litigation are shown in blue; many of these also have the potential to result in major redirection depending on the nature of court decisions. Note that Figure 2 is only intended to show the timing during which the risk is likely realizable, it is not intended to show the schedule impact of any given risk.

3.5.1 General Risks External to the Effort

External risks fall into two main groups: legal challenges and Congressional actions that might change the DOE's ability to develop the DWR. Past experience suggests that the effort should be assumed to be confronted with legal challenges throughout the process. Others should also be anticipated (e.g., adjudicatory or rulemaking challenges). Mitigation of the risks associated with legal challenges will rely in part on the implementation of a consent-based siting process, and in part on the strength of the technical investigations that will support decisions to proceed.

Risks associated with Congressional actions are relevant throughout the life of the development effort. In the absence of a sustained long-term national commitment, milestones identified in this draft plan will be delayed or unmet. There is little that can be done to mitigate these external risks, but project management should be aware that they exist.

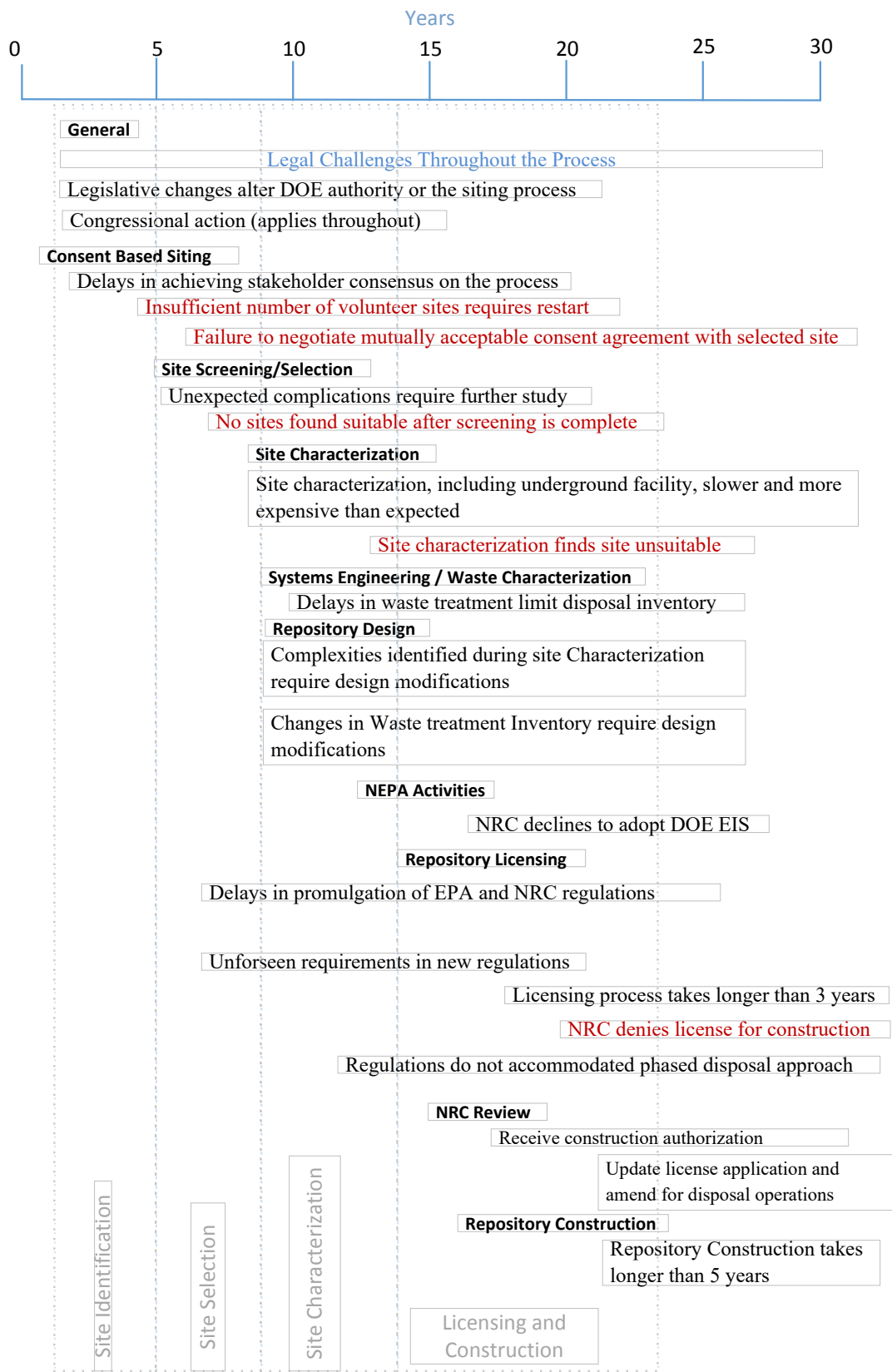


Figure 2 Selected DWR Development Risks

3.5.2 Risks Associated with Site Identification, Screening/Selection, Characterization, and Licensing

Although the DOE believes that experience gained in the U.S. and other nations over the past decades greatly increases the likelihood of successfully identifying a DWR site through a consent-based process, the possibility remains that the process will not result in the identification of a suitable site or construction of a DWR. The process could be delayed or fail at multiple points. For example, initial requests for expressions of interest could fail to identify potential host communities. If one or more potential host communities are identified, comparisons with initial screening guidelines could subsequently indicate that none warrant detailed site characterization. If one or more sites are selected for site characterization, detailed investigation could indicate that none are suitable for proposing to the NRC for licensing. The DOE's selection of a site notwithstanding, the NRC could ultimately determine that a proposed site was unsuitable for licensing as a DWR. Mitigation of risks associated with site identification and selection will be based on the adoption and implementation of a consent-based siting process. Risks that a selected site will ultimately be found unsuitable, either by the DOE or by the NRC, cannot be eliminated completely, but can be reduced through sound scientific investigation and appropriate repository design during the site characterization phase. Early notification that the regulator may find a site unacceptable is most readily fostered by maintaining close coordination with the regulator.

3.5.3 Risks Associated with the Complexity and Cost of Site Characterization, Repository Design, and Repository Construction

The durations of the Site Characterization, Repository Design, Licensing, and Construction activities described in Sections 3.3 and 3.4 are based on past experience and reasonable assumptions about how these activities may progress. They should not, however, be interpreted as bounding estimates and there will be multiple opportunities for unforeseen complications to cause delays at each step of the process. Mitigation of these risks will require continuous attention to project management.

3.6 Types and Quantities of Waste for Disposal

The DWR may be used to dispose of HLW and SNF derived from atomic energy defense activities and/or, potentially, the DOE's R&D activities. HLW and SNF of commercial origin are not candidates for disposal in the DWR. Specific waste types that are potentially eligible for disposal in the DWR are listed in the following sections. Not all wastes are available today in their final form for disposal, and as described in Section 3.2, disposal operations will proceed in phases. Preliminary identification of a waste type here as a candidate for disposal for the DWR does not preclude consideration of other disposal options for that waste, including emplacement in an NWPA repository, or other approved disposal alternatives. Table 2 summarizes the volume of the various wastes in the forms currently projected for disposal, estimated as of 2048, by which time most waste will have been treated.

Table 2. Summary of Volume of HLW and SNF derived from atomic energy defense activities or DOE R&D activities estimated as of 2048 (DOE 2014, Figure 1 and Table 1: SNL 2014 Table ES-1; and Appendix C, Table C-1)

Waste	Total Volume (m ³)
Savannah River Site — vitrified HLW	6,957
Hanford — vitrified HLW	14,089
INL — Calcine HLW	3,661
INL — Sodium-bearing waste after treatment by fluidized bed steam reforming	721
Hanford — Post-vitrification volume of cesium (Cs) and strontium (Sr) currently in capsules	453
INL — Electrometallurgically Treated HLW ⁴	132
Hanford — Federal Republic of Germany HLW glass	3
INL — Naval SNF ⁵	4,600
DOE-managed SNF ⁶	1,800

3.6.1 Defense High-Level Waste (HLW)

The following subsections describe the characteristics of various types of defense waste.

3.6.1.1 Existing and Projected HLW Glass at the Savannah River Site

As of the end of 2015, the Defense Waste Processing Facility at SRS had generated approximately 4,000 canisters of borosilicate glass resulting from the vitrification of liquid HLW created by SNF reprocessing that began at the SRS in 1954. Individual stainless steel canisters are 3 m (9.8 ft) long and 61 cm (2 ft) in diameter. Current projections call for generation of an additional 4,210 canisters of HLW glass at SRS (Chew and Hamm 2016), with vitrification activities complete in 2036. Additional information regarding the HLW glass at SRS, including radionuclide content and thermal output, is summarized by Chew and Hamm (2013, 2016) and SNL (2014).

3.6.1.2 Projected HLW Glass at the Hanford Site

The Hanford Site, located in southeastern Washington State, has approximately 207 million liters (54.6 million gallons) of radioactive and listed hazardous wastes stored in 177 underground tanks (Certa et al. 2011). The Waste Treatment and Immobilization Plant is being constructed on the Hanford Site to treat the tank wastes and convert them to glass waste forms for disposal.

The 2016 Amended Consent Decree sets a milestone for the WTP to achieve initial operations by 2036 (Moniz v. State of Washington 2016). It is now expected that the WTP will produce between 9,000 and 15,000 (GAO 2009) stainless steel canisters of HLW glass with a nominal value of 10,600 canisters (Wells 2014); canisters are planned to be 4.5 m (14.7 ft) long and 61 cm (2 ft) in diameter. Additional information regarding the projected HLW glass at the Hanford Site, including radionuclide content and thermal output, is summarized by DOE (2014) and SNL (2014, Section A-2.2.1).

⁴ The total volume of treated sodium bonded fuel treated includes Fermi-1 sodium bonded blanket fuel for which alternative treatments are under consideration (65 FR 56565), and which may not be included in wastes considered for disposal under this plan.

⁵ The total volume of projected naval spent nuclear fuel given here corresponds to 400 packages (SNL 2014), of which only the cooler packages may be included as wastes considered for disposal under this plan.

⁶ The total volume reported here is approximate, and will be affected by future decisions regarding the eligibility of some DOE-managed SNF for disposal in a DWR. The volume reported here is estimated to be approximately 70% of the total volume of DOE-managed SNF reported by DOE (DOE 2014, Figure 1 and Table 1).

3.6.1.3 Calcine HLW at the Idaho National Laboratory

Liquid HLW generated by the reprocessing of defense SNF at the Idaho Chemical Processing Plant (now the Idaho Nuclear Technology and Engineering Center) between 1953 and 1994 was stabilized as a solid granular calcine waste form between 1963 and 2000 (SNL 2014, Section A-2). Approximately 4,400 m³ (150,000 ft³) of calcine is currently stored in six sets of stainless steel bins within concrete vaults at the Calcine Solids Storage Facility at the INL, and final packaging has not been determined.

3.6.1.4 Sodium-Bearing Waste at the Idaho National Laboratory

Approximately 3.2 million liters (850,000 gallons) of liquid sodium bearing radioactive wastes resulting from the reprocessing of defense SNF (SNL 2014, Section A-2.3.2) are stored at the INL. These wastes contain transuranic elements, but have significantly less radioactivity from fission products than the calcine HLW derived directly from the reprocessing liquids. Fluidized-bed steam reforming has been selected as the preferred method of treatment for the waste, and will result in a dry, granular/powder carbonate mineral product (ID-DEQ 2013). A final decision regarding the disposition path for this waste has not been made (75 FR 137).

3.6.1.5 Cesium and Strontium Capsules at Hanford

There are 1,936 capsules stored at the Hanford Site that contain radioactive cesium and strontium extracted from wastes generated from the chemical processing of defense SNF. Cesium and strontium isotopes were removed from liquid HLW between 1974 and 1985 to reduce the heat load of wastes stored in underground tanks, and were packaged as cesium chloride and strontium fluoride salts placed in stainless steel and Hastelloy capsules. The primary radioactive isotopes remaining in these capsules are ¹³⁷cesium, ¹³⁵cesium, and ⁹⁰strontium and their decay products; 1,335 capsules contain cesium chloride and 601 capsules contain strontium fluoride. Individual cylinders are relatively small (less than 9 cm (3.5 in.) in diameter and less than 56 cm (22 in.) in length), but in aggregate, contain approximately one third of the total radioactivity (in curies) at the Hanford Site (SNL 2014). They are currently stored under water at the Waste Encapsulation and Storage Facility in the 200 East Area of the Hanford Site (SNL 2014, Section A-2).

3.6.1.6 Electrometallurgically Treated HLW

The DOE inventory of sodium-bonded SNF includes about 3.4 MTHM driver fuel and 57 MTHM blanket fuel. These fuels, which were generated during the operation of experimental fast-neutron breeder reactors, consist of both highly enriched and depleted uranium alloy fuel surrounded by a layer of sodium metal (for heat transfer) within an alloy cladding. The separation and refining of uranium using the electrometallurgical treatment (EMT) process will generate about 32,350 kg (72,320 lbs) of low-enriched uranium and two separate waste streams—high-level radioactive salt waste and metallic waste—that would be immobilized into waste forms for disposal. The recovered uranium will be stored until the DOE decides on its future use, and the two waste types will be immobilized in suitable waste forms and disposed of in a DWR (SNL 2014).

Salt wastes from EMT of sodium-bonded fuels result in a waste form that is a glass-bonded sodalite material referred to as the ceramic waste form. The ceramic waste form is being formed as a right cylinder up to 1 m (3.3 ft) tall with an outer diameter of about 0.5 m (1.6 ft). Each 1-m cylinder (~128 cylinders total) will weigh about 400 kg (900 lbs) and occupy a volume of about 0.2 m³ (7 ft³). The ceramic waste form product dimensions provide the option of packaging two ceramic waste form products in a HLW canister that is 3 m (9.8 ft) length, with a 61 cm (2 ft) outer diameter (the internal length and volume of this canister are about 2.5 m (8.2 ft) and 0.67 m³ (24 ft³), respectively). It is estimated that 128 ceramic waste form cylinders will be produced from treating 26 MTHM of sodium-bonded spent fuel from the Experimental Breeder Reactor-II and the Fast Flux Test Reactor. Assuming the amount of ceramic waste produced is proportional to the amount of fuel being treated, it is estimated

that 167 ceramic waste form cylinders will be produced from treating 34 MTHM of sodium-bonded spent fuel from Fermi-1. The approximately 295 ceramic waste form cylinders to be produced from all sources of sodium-bonded spent fuel will require 148 HLW canisters, each containing two ceramic waste forms.

The EMT metallic waste stream will be immobilized by melting it in an induction furnace at about 1,600°C with added zirconium and depleted uranium to produce an alloyed metallic waste form. The metallic waste form products are being cast as ingots sized to fit in the 3 m (9.8 ft) long HLW canisters that are also to be used to store/dispose the ceramic waste form products. The disk-shaped ingots will be about 0.4 m (1.3 ft) in diameter and up to 13 cm (5.1 in) thick, and will weigh about 12 kg (26 lbs). The first metallic waste form ingot was produced in 2012 (Westphal et al. 2013). It is currently estimated that 5,850 kg (12,900 lbs) of metallic waste form will result from EMT treatment of sodium-bonded spent fuel from the Experimental Breeder Reactor-II and the Fast Flux Test Reactor, yielding approximately 488 12-kg disks. It is estimated that 7,650 kg (16,900 lbs) of metallic waste form will result from EMT treatment of sodium-bonded spent fuel from the Fermi 1 reactor, yielding approximately 638 12-kg (26 lb) disks. It is assumed that the metal disks will be disposed of in the HLW canisters that contain the ceramic waste forms.

3.6.1.7 Existing Radioactive Waste Glass at the Hanford Site

Although the large majority of HLW at the Hanford Site exists in liquid form and will require further treatment before disposal, there are 34 canisters of radioactive borosilicate glass stored at the site that are ready for disposal (DOE 1997; SNL 2014, Section A-2.2.1.3). These canisters are 1.2 m (3.9 ft) long by 0.3 m (11.8 in.) in diameter, and were prepared by Pacific Northwest Laboratory in 1986 and 1987 to be used as heat and radiation sources for proposed experiments to be conducted by the Federal Republic of Germany (FRG) in the Asse Salt Mine (Kuhn and Rothfuchs 1989). The stainless steel canisters were fabricated in Germany and filled at the Hanford Site using a radioactive liquid-fed ceramic melter with borosilicate glass spiked with ¹³⁷cesium and ⁹⁰strontium to achieve the desired heat and dose targets. The FRG testing program was stopped before the canisters could be shipped, and they have remained at the Hanford site. They are currently stored at the Central Waste Complex at the 200-West area on the central plateau of the Hanford site.

3.6.2 DOE Managed Spent Nuclear Fuel

The DOE manages SNF from over 500 different sources (DOE 2007; DOE 2014). DOE-managed SNF includes a broad range of physical and chemical forms, most of which exist in relatively small quantities. Based on characteristics relevant to disposal options, they were aggregated into five of the ten waste groups addressed in DOE's *Assessment of Disposal Options* (DOE 2014, Table 2; SNL 2014). Four of these five groups contain SNF that is potentially eligible for disposal in a DWR. A fifth group, coated particle SNF, contains material of commercial origin and is not discussed in this plan since it is not eligible for disposal in a defense repository.

- **Metallic and non-oxide SNF** is, by mass, the largest category of DOE-managed SNF, and is dominated by about 2,100 MTHM of plutonium-production fuels at the Hanford Site, most of which has been packaged in multiccanister overpacks for disposal. The group also includes smaller quantities of a wide range of metallic and carbide fuels of both high and low uranium enrichment used in production and research reactors.
- **Sodium-bonded SNF** consists of a relatively small quantity (about 56 MTHM) of sodium-bonded fuels from research activities at the Fermi 1 reactor, the Hanford Site, and INL. These fuels are grouped separately from others because of the chemically reactive nature of the waste form, and they represent the only group of DOE-managed HLW and SNF for which information is insufficient to identify a disposal option for the waste form as it exists today,

without further treatment (SNL 2014). Because sodium-bonded fuels are expected to be treated prior to disposal these wastes are also discussed in Section 3.6.1.6.

- **DOE-managed oxide SNF** consists of about 180 MTHM of a variety of fuel types all of which share the common attribute of containing oxides of uranium or plutonium, in both highly enriched and low-enrichment forms. Some fuel in this group is originally of commercial origin and is not eligible for disposal in a DWR. Other fuel in this group is derived from defense and DOE research activities and therefore could be eligible. A small amount of SNF in this group will continue to be generated from future research activities.
- **Naval SNF** consists of SNF derived from research and operational activities of the Navy. Naval SNF is projected to contain 65 MTHM of highly enriched SNF in 2035; however, the inventory of naval SNF will continue to increase throughout the operational lifetime of the nuclear Navy.

Additional information about the DOE-managed SNF can be found in Wagner et al. (2012) and SNL (2014, Section A-1.3).

The DOE plans to package most (about 98% by mass) of its SNF other than sodium bonded fuels into canisters suitable for storage, transport, and disposal without the need to be re-opened (SNL 2014). A total of 3,542 of these canisters are projected at all DOE sites combined, of which approximately 2,450 canisters may be eligible for disposal in a DWR (DOE 2014, Table 1).

4 Plan Activities

This section summarizes the primary activities that must be completed to implement the plan using a consent-based process. Figure 3 illustrates how the initial planning for a separate repository for defense waste was performed in parallel with the consent based siting effort. The DWR draft plan has been modified to reflect current thinking in the draft consent-based process and will continue to be updated to reflect feedback on the consent-based siting process.



Figure 3 Initial plan for a DWR developed in parallel with the consent-based siting process

As noted in Section 3.3 and Table 1, an example scenario (two sites selected for screening and one site for characterization) is assumed to prepare a preliminary schedule for site identification, screening/selection, and characterization. Different scenarios would follow similar sequence of activities. The support activities that will need to precede or be performed in parallel with these activities are briefly described in Section 8.

4.1 Siting

In addition to the institutional aspects of the consent-based siting process that are described in Section 3.1, siting of the DWR will require extensive technical activities to identify potential candidate sites, screen them, and characterize one or more promising sites in detail to establish a technical basis for proceeding with DWR development.

The NWSA Section 8(b)(3) requires that a DWR will comply with NRC licensing requirements, and if, as discussed in Section 2.6, the DOE proceeds with implementing this plan under the requirements of existing regulations at 40 CFR 191 and 10 CFR 60, the DOE will use siting criteria specified by the NRC at 10 CFR 60.122 in evaluating sites during this process.

The DOE will collaborate with stakeholders consistent with the consent-based siting approach throughout the site evaluation process.

4.1.1 Site Identification

As shown in Table 1 and Figure 1, site identification activities are assumed in this example to begin following development of the consent-based siting process. In this phase, preliminary information will be

used to evaluate potential candidate sites identified through the consent-based siting process. It is expected that a subset of sites can be selected for full screening evaluations in Year 5.

4.1.2 Site Screening / Selection

As discussed in Section 3.3, site screening activities are assumed to begin in Year 5, following the identification of potential candidates in the first phase. Site screening could be complete by Year 8.

4.1.3 Site Characterization

If site screening / selection activities indicate potentially suitable sites among the candidates identified through a consent-based process, the DOE will select one or more of those sites for detailed site characterization consistent with the consent-based siting approach, beginning in Year 8. Site characterization plans will be developed for any site selected for site characterization, and will be consistent with the NRC's expectations for site characterization activities in 10 CFR 60. Specifically, the NRC defines site characterization at 10 CFR 60.2 as follows:

“Site characterization means the program of exploration and research, both in the laboratory and in the field, undertaken to establish the geologic conditions and the ranges of those parameters of a particular site relevant to the procedures under this part. Site characterization includes borings, surface excavations, excavation of exploratory shafts, limited subsurface lateral excavations and borings, and in situ testing at depth needed to determine the suitability of the site for a geologic repository, but does not include preliminary borings and geophysical testing needed to decide whether site characterization should be undertaken.”

If, as discussed in Section 2.6, the DOE proceeds with implementing this plan under the requirements of existing regulations at 40 CFR 191 and 10 CFR 60, site characterization plans will follow the requirements specified in 10 CFR 60.15 through 60.18.

Once site characterization is complete, and if the site is confirmed to be suitable for disposal, these activities will support completion of the EIS and license application for construction authorization.

4.2 Waste Characterization

Waste characterization activities are assumed to begin in Year 2 with the evaluation of HLW and SNF that is potentially eligible for disposal in a DWR.

Characterization would focus on gathering new information based on existing or expected disposal-ready waste forms (e.g., HLW glass at SRS and SNF already packaged at the Hanford Site), with the expectation that those wastes will be the focus of the first phase of DWR design, licensing, and operation. As site selection and repository design activities progress, additional information will become available that will help inform decisions about treatment options and disposition pathways for other eligible waste forms. Comprehensive waste acceptance criteria for the DWR are assumed to be developed before the repository conceptual design is complete. If, and when, a new waste form is proposed for disposal, characterization can be conducted to support its inclusion in the initial licensing action or in a license amendment, as timing allows.

4.3 DWR Design

Preliminary DWR design concepts are assumed to be developed for various geologic media beginning in Year 2. In the absence of site-specific information, these design concepts will be based on generic geologic information, and will examine options for disposing of both existing and projected HLW and SNF, as described in Section 3.6. More detailed repository designs will be developed beginning in Year

6, after a site(s) is identified, and a detailed preliminary design suitable for supporting the EIS and License Application would then be developed. This design will include both surface handling and temporary storage facilities and subsurface emplacement operations.

4.4 Evaluation of System Performance

Iterative evaluations of the anticipated performance of the disposal system will be performed in parallel with site characterization, waste characterization, and repository design activities. These evaluations of system performance will be used to inform site characterization activities, waste treatment and waste acceptance decisions, and repository design, and will contribute to the overall safety case for the disposal system. These evaluations will be used to support EIS and License Application documentation.

4.4.1 Operational and Preclosure Safety Assessment

The operational and preclosure safety assessment will be based on information from the repository design, site characterization, and waste characterization activities, and will include both a preclosure safety analysis and documentation of procedural controls that will ensure DWR safety during operations. When complete, the operational and preclosure safety assessment will support both the EIS and the license application for construction authorization.

As the licensee for the DWR the DOE will need to provide as part of the Safety Analysis Report (10 CFR 60.21(c)) an analysis of the performance of the major design structures, systems, and components, both surface and subsurface, to identify those that are “important to safety” (10 CFR 60.21(c)(1)(ii)(E)). With respect to repository structures, systems and components, important to safety means engineered features of the repository, the functions of which are to prevent the exceedance of radiation exposure limits in the event of the occurrence of two categories of design basis events (10 CFR 60.21(c)). The two categories of design basis events are distinguished by whether they are reasonably likely to occur regularly, moderately frequently, or one or more times before permanent closure of the repository (Category 1); or, considered unlikely, but sufficiently credible to warrant consideration (Category 2). The description and analysis of design and performance requirements for repository structures systems and components must include a demonstration that the exposure limits at 10 CFR 60.111(a) and 10 CFR 60.136 will be met for Category 1 and Category 2 design basis events, respectively (DOE 2008a, Section 1.6.1).

4.4.2 Postclosure Safety Assessment

As prescribed in EPA and NRC regulations, the DOE is required to perform a postclosure safety assessment that evaluates the capability of the disposal system to provide effective long-term isolation of the wastes. The assessment will be based on information from the repository design, site characterization, and waste characterization activities, and will examine how the engineered and natural (i.e., geologic) components of the disposal system work together to ensure long-term safety. When complete, the postclosure safety assessment will support both the EIS and the license application for construction authorization to be submitted to the NRC.

The form of the postclosure safety assessment is specified in EPA and NRC regulations 40 CFR 191 and 40 CFR 197 and 10 CFR 60 and 10 CFR 63, respectively. Specifically, as defined by the EPA for repositories at locations other than YM at 40 CFR 191.12, “*Performance assessment* means an analysis that: (1) identifies the processes and events that might affect the disposal system; (2) examines the effects of these processes and events on the performance of the disposal system; and (3) estimates the cumulative releases of radionuclides, considering the associated uncertainties, caused by all significant processes and events. These estimates shall be incorporated into an overall probability distribution of cumulative release to the extent practicable.”

4.5 DWR Construction

DWR construction can begin after authorization by NRC (10 CFR 60.31). Repository construction is typically divided into surface and subsurface realms and further subdivided into non-radiological and radiological facilities and systems. Depending on the scope and design for initial repository operations, the number of surface facilities and the extent of subsurface excavation will vary. Listed below is a representative selection of items requiring construction for repository operations based on information for the previously considered YM repository (DOE 2008b). The construction period is anticipated to last 5 to 7 years and includes activities that would begin on receipt of the construction authorization from the NRC and that the DOE would complete by the time it received SNF or HLW.

Surface non-radiological facilities / systems:

- Domestic water systems
- Two water sources for fire suppression
- Electrical power and distribution system
- Septic tank and leach field/wastewater treatment systems
- Sewer and storm water collection systems
- Site roads and rail
- Hazardous Materials Collection Depot
- Borrow pits
- Explosives Storage Area
- Central Security Station
- Central Control Center Facility
- Offsite Training Facility
- Housing for construction workers
- Sample Management Facility
- Facilities for Performance Confirmation activities
- Marshalling yard and warehouse
- Heavy Equipment Maintenance Facility
- Warehouse and Non-radiological Receipt Facility
- Utilities Facility, cooling tower, and evaporation pond
- Emergency and Standby Diesel Generator Facilities

- Railcar buffer area
- Truck buffer area
- Helicopter pad

Surface Radiological facilities / systems:

- Cask Receipt Security Station
- Site Transportation Network
- Receipt Facility
- Initial Handling Facility
- Canister Receipt and Closure Facility
- Wet Handling Facility (potentially not needed if all SNF is placed in sealed canisters before shipment)
- Transporter Security Station
- Low-Level Waste Facility

The design of DWR subsurface facilities and the openings providing access to them are more dependent on the repository location and geologic media than are the surface facilities. Listed below is a representative selection of subsurface openings requiring construction to enable repository operations based on information for the previously considered YM repository (DOE 2008b). It is likely that subsurface construction will be staged so that after an initial subsurface layout is constructed to accommodate beginning waste package disposal, subsurface construction will proceed in conjunction with waste emplacement.

Subsurface non-radiological facilities / systems:

- Initial subsurface entry development area
- Subsurface access by ramp(s) or shaft(s)
- Ventilation shaft(s)
- Access main(s)
- Emplacement drift(s)

4.6 Transportation

Detailed planning for transportation of HLW and SNF from DOE sites is highly dependent on the location of the DWR site; regardless of the destination, shipments will meet or exceed the level of safety established by the NRC's and the Department of Transportation's (DOT) requirements and standards. The DOE has authority under the AEA to regulate transportation of radioactive materials undertaken by the DOE or on its behalf. The DOE exercises this authority to regulate certain DOE shipments, such as shipments undertaken by government employees or shipments involving national security or other critical interests. For most of its shipments, the DOE typically utilizes commercial carriers and does not exercise its AEA authority. Accordingly, most DOE shipments are undertaken by commercial carriers under the same terms and conditions as comparable commercial shipments and are subject to regulation by the DOT and the NRC. The DOT and the NRC regulate commercial transportation of radioactive material. Transportation and packaging requirements and standards are provided in the NRC's regulations at 10 CFR Part 71 Packaging and Transportation of Radioactive Material, and the DOE regulations at 49 CFR Subchapter C—Hazardous Materials Regulations. Even in those instances where DOE does exercise its AEA authority over its shipments, it is DOE policy that all DOE shipments are to be conducted in a manner that meets or exceeds the level of protection associated with comparable commercial shipments under the NRC's and DOT's regulations. DOE's transportation policy is set forth in several directives including Order 460.1C, Packaging and Transportation Safety, Order 460.2A, Departmental Materials Transportation and Packaging Management, and Order 461.1C, Packaging and Transportation for Offsite Shipment of Materials of National Security Interest. Transportation risks have been analyzed and discussed by the NRC (NRC 2014) and the National Research Council of the National Academy of Sciences (National Research Council 2006). The DOE would transport spent nuclear fuel and high-level radioactive waste from DOE sites to the DWR in NRC-certified transportation casks. The transportation mode is uncertain; however, the mix may include both rail and truck transport.

4.7 DWR Operations

DWR operations can only begin after NRC has issued a license to receive and possess source, special nuclear, or byproduct material at a geologic repository operations area (10 CFR 60.41). DWR operations will last for decades and are divided into several contiguous activities: waste receipt, waste packaging (if necessary), waste package transport to the subsurface facility, and waste emplacement. Depending on the scope and design for initial DWR operations, the extent of subsurface excavation will vary. As mentioned in Section 4.5, it is likely that construction will proceed in conjunction with waste emplacement. Described below is a representative selection of steps required for repository operations based on information for the previously considered YM repository (DOE 2008b).

Transportation casks containing SNF or HLW would be received at the cask receipt security station. Shipments of SNF and HLW would arrive at the station on commercial railcars that carried rail transportation casks or on truck trailers that carried truck transportation casks. On arrival, the shipments would be inspected and custody of, or responsibility for, the transportation casks and the waste would be transferred to the repository. Casks would be moved to a buffer area in the protected area of the repository operations area to await processing in other facilities.

After processing in either the initial handling facility, the canister receipt and closure facility, or conceivably a wet handling facility, wastes would be packaged as appropriate for disposal and prepared for the transport and emplacement vehicle(s) to receive it, move it to the subsurface, and emplace it in the repository. A site transportation network consisting of rail lines and roads would be used to transport the waste from the waste handling facilities to the emplacement portal (either a shaft or a ramp). Canister movement would be accomplished in shielded transfer casks.

The mode of access to the underground (ramp or shaft) has substantial impacts on the mechanisms used to convey the waste to its emplacement area. Ramp access allows use of a single transport vehicle to convey the waste from surface facilities to the underground and into the emplacement panel. Shaft access obviates the use of a single transport vehicle, and requires three logistical steps for delivery to the emplacement panel: transport from surface facilities to the top of the shaft; lowering the waste package down the shaft; and transport from the base of the shaft to the emplacement panel.

The completed waste packages would be moved to the subsurface and emplaced in the repository. Transport and emplacement vehicle(s) would transport the waste package to the subsurface portal or shaft, convey it to the subsurface access main(s), and then to the appropriate emplacement drift. The transport and emplacement vehicle(s) used would be a specialized, shielded vehicle(s) designed to move waste packages safely from the surface facilities into the subsurface facility for emplacement. To accommodate the high radiation environment of the emplacement drifts, the transport and emplacement vehicle(s) would be remotely controlled.

4.8 DWR Closure

The final phase of the DWR preclosure period is the closure of the subsurface facility which requires NRC approval of an application submitted by the DOE to amend the license (10 CFR 60.51) prior to executing closure activities.

The following activities are a representative selection of activities required for repository closure based on information for the previously considered YM repository (DOE 2008a):

- Installation of any engineered barriers external to emplaced waste packages, if necessary
- Removal of noncommitted materials from the subsurface facility
- Placement of backfill in ramps and shafts
- Re-grading of affected areas and installation of surface monuments
- Final site restoration

4.9 License Termination

Following permanent closure and the decontamination or dismantlement of surface facilities, the DOE may apply to NRC for an amendment to terminate the license (10 CFR 60.52).

4.10 Research, Development, and Demonstration

In parallel to its work on a DWR, the DOE continues to conduct R&D on multiple concepts for geologic disposal of DOE-managed HLW and SNF (e.g., evaluation of design concepts for mined repositories in multiple rock types and deep boreholes in crystalline rock). To complement the proposed development of a separate DWR, additional R&D efforts will focus on information needs specific to disposal of high thermal-output naval SNF in mined repositories that would occur in a later phase and the field-scale testing of deep borehole disposal concepts for some smaller waste forms (DOE 2014, Section 5).

5 Environmental and Regulatory Compliance Activities

5.1 National Environmental Policy Act Related Activities

The general applicability of NEPA is described in Section 2.2. The DOE is currently developing a preliminary NEPA strategy that will take into consideration comments received in response to this draft plan and through the consent-based siting process. Activities related to NEPA requirements will continue throughout the DWR effort, will require substantial resources, and will be integrated into other technical and regulatory activities.

Appendix D to Subpart D of 10 CFR 1021, which discusses classes of actions that normally require preparation of an EIS, specifically identifies “Siting, construction, operation, and decommissioning of major treatment, storage, and disposal facilities for high-level waste and SNF, including geologic repositories...” among such actions. Consequently, DOE acknowledges that the final decision on the location for a DWR will require preparation of an EIS.

5.2 Nuclear Regulatory Commission Related Activities

The general applicability of NRC regulations is described in Section 2.6. Activities related to NRC requirements will not be as resource-intensive as other efforts in the first five years. However, they will escalate throughout the site characterization phase and will eventually consume much of the effort leading up to the submittal and review of the license application. One important early step in implementation of this plan, identified in Section 3.2, will be development of a licensing strategy for phased DWR development under the existing applicable regulations (10 CFR 60 and 40 CFR 191) including possible regulatory interactions about updates of the regulations. If as expected, the EPA and NRC develop new regulations governing geologic disposal of SNF and HLW, the licensing strategy will be revised accordingly.

As discussed in Section 8, DOE activities potentially relevant to future licensing activities for a DWR will be conducted in a manner that meets the NRC’s expectations for a licensee. NRC expectations for the DOE will include, among other things, demonstration of a Nuclear Safety Culture with a Safety Conscious Work Environment (NRC 2004; NRC 2005; 76 FR 34773), and attention to Quality Assurance (QA). The DOE is familiar with operating in compliance with EPA and NRC requirements, based on its activities on previously proposed repository sites.

It will be important for the DOE to interact with NRC early and frequently to maintain a constant working relationship with the regulator for this project. As early as site characterization the DOE may consider inviting an NRC On-Site Representative to participate. The representative is an NRC employee, often a geoscientist or nuclear engineer, who is present at the project site and has access to and observes day-to-day project activities.

One of the most significant activities prior to construction of the DWR will be development of the license application tendered to the NRC. The DOE should assume this effort will consume many resources for at least 2 to 3 years. The license application for the previously considered YM repository constituted more than 8,000 pages, and was accompanied by more than 100 supporting technical documents.

5.3 Other Requirements

Multiple statutes and regulations in addition to those that implement the NEPA, AEA, and NWPA will also apply to the development, operation, and closure of a geologic repository. Specifically, the DOE is subject to environmental protection and transportation requirements including, but not limited to, those set by the Clean Air Act; Clean Water Act; Hazardous Materials Transportation Act; Emergency Planning and Community Right-to-Know Act of 1986; Comprehensive Environmental Response, Compensation,

and Liability Act; Resource Conservation and Recovery Act; National Historic Preservation Act; Archaeological Resources Protection Act; Endangered Species Act; NRC regulations; and applicable state statutes and regulations.

In meeting these requirements, the DOE will interact with local, state, tribal, and federal agencies authorized to issue necessary permits, licenses, and other regulatory approvals, and will also work with agencies responsible for protecting such significant resources as endangered species, wetlands, or historic properties. Depending on the location of selected sites, the DOE may also need to coordinate with other branches of the Federal government including the U.S. Department of Agriculture, U.S. Department of the Interior including its Bureaus (U.S. Fish and Wildlife Service, National Park Service, and Bureau of Land Management), and the Mine Safety and Health Administration.

Complete listings of applicable statutes and regulations will be site-specific, and will be prepared as part of the NEPA EIS documentation.

6 Institutional Activities

The NWPA (Section 101(b)) provides that states or Tribes involved with the development of a geologic repository for permanent disposal of HLW and SNF derived from national defense and R&D activities of the Department “shall be entitled ... to rights of participation and consultation identical to those provided in sections 115 through 118 [of the NWPA], except that any financial assistance ... shall be made from amounts appropriated to the Secretary for purposes of carrying out this section.” Section 115 of the NWPA defines the process for review and approval of the site selection process. Section 116 of the NWPA defines the terms of state participation in siting decisions, and Section 118 defines terms for tribal participation. Section 117 specifies the terms under which the Federal government must consult with states and Tribes.

Additional institutional activities will be defined as the consent-based siting process is developed. For the purposes of this draft plan, the primary institutional activities that will be required are those that are described in the following sections.

6.1 Interactions with Potential Host States, Tribes, and Communities

As discussed in Section 3.1, a consent-based siting process will provide a framework for the key technical steps in evaluating sites for a DWR. For the purposes of this draft plan, these steps are assumed to be:

- An initial phase in which potential candidates identified through the consent-based process are evaluated based on preliminary information
- A site screening phase in which potential candidates are more thoroughly evaluated using available information to the maximum extent possible to determine whether the site is sufficiently promising for further consideration
- A longer and more extensive detailed site characterization effort involving both surface-based and underground tests to determine whether the site is suitable for a DWR and provide the data needed to support repository design, licensing, and construction

One of the provisions of the NWPA that will apply to a DWR requires the DOE, during site characterization and subsequent repository development and operation, to consult and cooperate with the Governor and legislature of the host state and the governing body of any affected Indian tribe “in an effort to resolve the concerns of such State and any affected Indian tribe regarding the public health and safety, environmental, and economic impacts of any such repository” (NWPA Section 117(b)). The DOE is directed to seek to enter into a binding written agreement with the state and, where appropriate, to enter into a separate binding agreement with the governing body of any affected Indian tribe, specifying procedures for state and tribal participation, when a site is selected for characterization or even as soon as the site is identified as potentially acceptable (if the state or Tribe requests an agreement) (NWPA Section 117(c)). The NWPA also provides any state, Indian tribe or unit of local government within whose jurisdiction a site for a DWR is located an opportunity to designate a representative to conduct on-site oversight activities at the site.

6.2 Interactions with National Stakeholder Groups and Interested Parties

The DOE is already engaged in interactions with a wide range of stakeholders through a variety of mechanisms that can be utilized as needed for this purpose:

As mentioned above, DOE (through the Office of Nuclear Energy) issued an Invitation for Public Comment in December 2015 to solicit input from the public, communities, stakeholders, and

governments at the tribal, state, and local levels on how to design a consent-based siting process for nuclear waste storage and disposal facilities. During the first half of 2016, the Department hosted eight public meetings around the country plus two meetings (kick-off and close-out) in Washington, DC. At these meetings, which were held in geographically diverse locations, the Department heard first-hand from members of the public, communities, states, Tribes, and other interested stakeholders on what matters to them as DOE moves forward in developing a consent-based siting process. Meetings were held in major cities across four regions: the Northeast (one meeting), the Midwest (two meetings), the West (four meetings), and the South (one meeting). These meetings were designed to encourage participation and to provide multiple opportunities for public input and two-way dialogue. In addition to the Invitation for Public Comment and regional public meetings, the Department used other opportunities—including conferences and professional meetings—to engage in dialogue with stakeholders and members of the public on the design of a consent-based siting process. DOE also welcomed and accommodated requests, where possible, for additional meetings to discuss its consent-based siting effort. In September 2016 the DOE issued for comment a draft report summarizing the public input received. The final version is scheduled for publication in December 2016. A draft *Consent-Based Siting Process Design Document* will be published for public comment in December 2016. The CBS process design document reflects the public input and offers preliminary views on siting guidelines and criteria.

- The DOE Office of Environmental Management supports, by means of grants and cooperative agreements, various national intergovernmental organizations. These organizations include the Energy Communities Alliance, the Environmental Council of States, the National Association of Attorneys General, the National Governors Association, and the National Conference of State Legislatures, and the State and Tribal Governments Working Group.
- The Secretary of Energy Advisory Board provides the Secretary of Energy with advice and recommendations on activities and operations of the DOE as the Secretary may direct.
- The Environmental Management Advisory Board provides advice and recommendations to the Assistant Secretary for Environmental Management concerning issues affecting the Environmental Management program. Members may include representatives of entities including, but not limited to, research facilities, academic institutions, regulatory entities, and stakeholder organizations, as needed.
- The DOE Office of Nuclear Energy is creating a subcommittee of the Nuclear Energy Advisory Committee (NEAC) to provide advice on consent-based siting and integrated waste management.
- The DOE Office of Nuclear Energy is working with states and Tribes through a variety of means to develop institutional procedures for transportation of SNF to a federal facility or facilities. For example, DOE's National Transportation Stakeholders Forum is the mechanism through which DOE engages at a national level with states, Tribes, federal agencies, and other interested stakeholders about DOE's shipments of radioactive materials. In addition, the Nuclear Fuels Storage and Transportation Planning Project is working with states through cooperative agreements with State Regional Groups (SRGs). The SRGs which represent the interests of their member States include the Council of State Governments'

Northeast High-Level Waste Transportation Task Force, the Council of State Governments' Midwestern Radioactive Materials Transportation Committee, the Southern States Energy Board's Radioactive Materials Transportation Committee, and the Western Interstate Energy Board's High-Level Waste Committee. Tribal governments are sovereign nations, and the DOE interacts with Federally recognized Tribes on a government-to-government basis as described in DOE Order 144.1, *Department of Energy American Indian Tribal Government Interactions and Policy*.

Making use of these ongoing interactions concerning waste transportation could be an effective way to initiate a dialogue about DWR siting. This would be consistent with the BRC's conclusion that in the area of transportation, the DOE has done a good job of stakeholder interactions that should be emulated in the future (BRC 2012, p. 86). The experience and relationships developed by the DOE in dealing with transportation are particularly relevant to consultations concerning a national DWR siting process because the same entities—tribal, state, and local governments—are key actors in both areas. Tribal, state, and local governments and other stakeholders that have an interest in waste transportation are also likely to be equally interested in any process for siting waste facilities to and from which waste would be transported. Furthermore, transportation will clearly be a consideration in siting waste facilities.

7 Roles and Responsibilities

For the purposes of this draft plan, the DOE is assumed to have overall responsibility for developing the detailed plans necessary to implement the plan described and will be responsible for directing and managing all work activities, consistent with requirements established by DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*. The DOE will be the licensee under applicable NRC regulations, and will be responsible for ensuring that all legal and regulatory requirements are met.

Roles and responsibilities of the DOE contractors will be defined by contracts, and will include compliance with all applicable legal and regulatory requirements, and conduct of scientific and engineering investigations in support of this program. Federal agencies other than the DOE will have roles and responsibilities relevant to this effort as defined by statute.

8 Support Activities

Successful implementation of this plan will require effective support activities in multiple areas. Activities and roles will be identified as the DWR development planning progresses.

The list below summarily identifies some, but not all functions needed for a DWR development organization.

- *DWR Management* provides the vision, the management approach, and program policies and identifies procedures for the assembly and operation of the organization. The entire organization's activities need to be conducted in accordance with nuclear safety culture principles reflected in a Safety Conscious Work Environment and implementing a Quality Assurance (QA) program consistent with DOE expectations and those of the regulator.
- *Public Engagement and Consent-Based Siting* defines, designs, and implements processes for public engagement in organization activities.
- *Quality Assurance* defines the program level requirements necessary to formulate a high quality and streamlined QA program to satisfy ASME NQA-1 2015 standards that meet NRC licensing rules.
- *Regulatory/Licensing* addresses activities to manage the regulatory support activities conducted by the organization, regardless of the regulator's identity (e.g., NRC, EPA, or state entities).
- *Science and Engineering* is responsible for the direction, coordination, performance, and oversight of science and engineering activities discussed in more detail in Section 4.
- *Operations Management* is responsible for the direction, coordination, and oversight of the Business Management, Organizational Assurance, Information Management, and IT Systems elements. Reporting directly to the DWR Manager, Operations Management is responsible for the day-to-day functionality of the principal support organizations.

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Appendix A. Repository Program Cost Estimates

A-1. Estimated Costs for Initial Phase of the Defense Waste Repository

As stated in Section 3.4, the cost of a repository is highly uncertain; this uncertainty results from multiple sources, including the site selection process, the host rock type selected, the inventory of waste selected for disposal, and the final design of the repository.

To calculate a more reliable and complete cost, the geology, location, and waste quantities and forms need to be better defined. These inputs will not become available until a potential host community volunteers through the consent-based siting process. Table A-1 shows a ROM estimate for an example scenario to better understand what resources would be needed to identify and screen potential sites and perform the needed characterization to evaluate site suitability. This cost estimate is independent of geology.

Table A-1. Preliminary ROM estimate of program costs from inception through site characterization for a single representative case in which two candidate sites are identified for screening and only one site is chosen for full characterization (Millions of Dollars)

DURATION	3 YEARS	3 YEARS	5 YEARS	11 YEARS
PROGRAM PHASE	Site Identification	Site Screening	Site Characterization	TOTAL
Consent-Based Siting Process	\$45 M	\$45 M	\$300 M	\$390 M
Site Screening and Selection	\$45 M	\$400 M	\$10 M	\$455 M
Site Characterization	\$0 M	\$50 M	\$600 M	\$650 M
Waste Characterization	\$6 M	\$10 M	\$35 M	\$51 M
Repository Design	\$4 M	\$30 M	\$275 M	\$309 M
National Environmental Policy Act (NEPA) Activities	\$10 M	\$15 M	\$100 M	\$125 M
Repository Licensing	\$5 M	\$15 M	\$100 M	\$120 M
Repository Construction	\$0 M	\$0 M	\$730 M	\$730 M
Management Support	\$15 M	\$70 M	\$150 M	\$235 M
TOTAL	\$130 M	\$635 M	\$2300 M	\$3065 M

Additional information regarding cost estimates shown in Table A-1 is as follows:

Consent-Based Siting Process and Community Relations: Cost estimates are based on an assumed annual budget of \$15 million during the initial phases with an increase to \$50 million per year after a single site has been selected for full characterization. These costs include grants and other payments to potential host communities.

Site Screening and Selection: Cost estimates assume \$15 million per year during initial phases, increasing to \$100 million per year for technical investigations and evaluations during the screening and selection process. Costs end in this activity after a single site is selected for characterization.

Site Characterization: Costs are estimated to be on the order of \$120 million per year during the period between site selection and the beginning of licensing.

Waste Characterization: A modest level of effort will be required throughout to identify the waste proposed for disposal in the DWR and to ensure that waste characterization information is sufficient to support licensing.

Repository Design: A modest level of effort will be needed early in the process to develop sufficient preliminary design information to support screening evaluations. Full scale repository design activities do not begin until after a site has been selected.

National Environmental Policy Act (NEPA) Activities: Cost estimates assume that NEPA-related activities begin with program inception and continue throughout, including preparation of an EIS during the site characterization phase.

Repository Licensing: Cost estimates assume that interactions with the NRC begin with program inception and continue throughout, culminating in preparation of a license application to the NRC.

Repository Construction: Construction-related costs are assumed to begin during the site characterization phase with the excavation of the first exploratory underground workings. Costs increase when construction of the disposal region begins following the issuance of a construction authorization license.

Management Support: Costs associated with management support include management and integration costs, business support, quality assurance, and organizational support functions. These costs are estimated at \$30 million per year after a single site has been selected.

The estimates provided here and in Section 3.4 should be used for preliminary scoping purposes only. In the context of DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, the plan to develop the DWR has not met the CD-0 (Approve Mission Need) threshold. New cost analyses were not performed to support these estimates, and the available source material summarized in the following sections was developed at different times for a range of disposal concepts, including significant differences in the type and quantity of waste for disposal, the chosen host rock, assumptions about the siting and licensing process. Cost estimates from other programs are presented in some cases in actual dollars at the time of expenditure, and in other cases in constant dollars reported for different years. Cost estimates from other programs, including in particular the previously considered YM repository, may have limited relevancy for development of a DWR because of major differences in both programmatic constraints and the disposal inventory.

More detailed cost estimates can be prepared at various stages in the effort, and will be impacted by choices regarding the inventory of waste for disposal, the approach taken to consent-based siting, the geologic media chosen for the repository, and the final design of the repository.

A-2. Other Cost References

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March 1, 2017

U.S. Department of Energy
Office of Nuclear Energy
Response to DWR RFC
1000 Independence Ave. SW.
Washington, DC 20585

RE: Response to DWR RFC

Our organization – the Savannah River Site Community Reuse Organization (SRSCRO) is the U. S. Department of Energy's designated Community Reuse Organization. We are charged with developing and implementing a comprehensive strategy to diversify the economy of a five-county region in the Central Savannah River Area (CSRA) of Georgia and South Carolina.

The SRSCRO is governed by a 22-member Board of Directors composed of business, government and academic leaders from both Georgia and South Carolina. Initially, its mission was to develop and implement a regional economic development plan utilizing technology-based facilities at the Savannah River Site. Today, SRSCRO remains focused on diversifying the region's economy by supporting new business ventures that create new jobs in our region.

The SRSCRO Board of Directors recognizes that the Savannah River Site has a major impact on our region's economy as the principal employer, a major purchaser of goods and services and an institution with technical capabilities that can serve as the basis for the development and/or expansion of private employment in the region.

Over its 60 year history, the Savannah River Site did yeoman's service in meeting the nation's need for nuclear material. In the process, high-level wastes were produced and provisions were made for temporary storage of these waste materials on site. The summary of volume of HLW in Table 2 of the DWR notes SRS will have 6,957 m³ of vitrified HLW.

DOE's action in terminating Yucca Mountain and not finding a replacement has the effect of turning the Savannah River Site and many other locations across the country into de facto permanent storage sites.

Billions of taxpayer and ratepayer dollars have been spent on the Yucca project. Current law still requires that a geologic repository be built at Yucca Mountain for the permanent disposal of both defense waste and SNF. While the SRSCRO supports proceeding with the Yucca Mountain licensing application, we

also support pursuing other options for defense waste simultaneously in order to begin moving nuclear waste out of our communities in the most expedited manner possible.

Without a geologic repository, defense wastes could remain orphaned in our communities that never planned to be permanent or long-term storage sites. A final geologic repository - whether at Yucca Mountain or elsewhere - is essential to the final disposition of defense waste and integral to the success of DOE's Environmental Cleanup programs regardless of issues of combining it with commercial spent fuel or not.

The SRSCRO believes the federal government has broken faith with our communities and with others across the country that trusted implicitly in the Department of Energy's commitment to a final disposition path for our defense waste. While the SRSCRO supports existing and new DOE missions, that support is predicated on the condition that there is a final disposition path for these waste materials.

The DWR proposes a path forward to begin the studies and actions needed to develop a potential repository for defense high-level nuclear waste. We believe any movement on this issue is good. However, there are many unresolved questions that still need to be addressed. Below is a list of questions and concerns, we would like to see resolved and answered before the draft DWR plan becomes final.

1. The plan assumes that the DOE will have overall responsibility for developing the detailed plans necessary to implement the action described and will be responsible for directing and managing all work activities. The DOE will be the licensee under applicable NRC regulations and will be responsible for meeting all legal and regulatory requirements. Is the intent that this repository be owned and managed by DOE or a private entity?
2. If the facility is owned and managed by DOE, will the site selection only look at land currently owned by DOE? Or, will DOE purchase the land?
3. If the facility is privately owned and managed, will a RCRA Part B Permit be required to accept mixed waste? The analysis in the DWR only addresses RCRA as if it is a DOE site and appears to assume DOE is exempt. Although some states have allowed DOE cleanup mixed waste disposal facilities without a RCRA permit, this may not apply to all States and may not apply to the DWR if it accepts mixed waste. DOE needs to reconsider and reinvestigate its position on the requirements for and associated timeline for applying for and receiving a RCRA hazardous waste permit.

4. Per this Report, the key milestones assumed for this plan include: initiation of the development of a consent-based siting process, identification of sites for evaluation, selection of a site for characterization, submittal of a license application to the NRC seeking authorization to construct the DWR, and initiation of disposal operations. It further states, this indicates that a DWR could be available about a decade earlier than a common repository. Given that site characterization alone may take years, and since many of these key milestones (including site characterization) have already been met for Yucca Mountain (the common repository), what evidence exists to support the statement that a DWR could be available 10 years ahead of Yucca Mountain?
5. What is the estimated life-cycle cost of the DWR through operation and closure? What methodology was used to arrive at the estimated life-cycle cost?
6. What are estimated yearly operational funding requirements for the DWR once it becomes operational? How long is the repository projected to operate, and what rate of inflation was applied to the estimate?
7. This Report references the 2014 DOE report (DOE 2014, p. ES-1) in its section addressing the need for the DWR. It states the 2014 DOE report recommended that “DOE pursue options for disposal of DOE-managed HLW from defense activities and some thermally cooler DOE-managed SNF, potentially including cooler naval SNF, separately from disposal of commercial SNF and HLW. What is DOE’s position on DOE-managed HLW which by chemical composition could be classified as TRU waste and disposed of at WIPP, thus reducing the volume of waste destined for the DWR and expediting the removal of such TRU waste from sites like SRS?
8. Please explain what this statement is referring to: “Depending on the characteristics of the selected DWR site and future developments with respect to waste treatment options, additional HLW waste forms other than those currently anticipated could be considered in a later phase of DWR development”? Does it mean that DOE-managed liquid waste forms could be accepted in the future and HLW vitrification may not be required? Does it mean that commercial wastes could be disposed at the DWR?
9. What is the make-up of the DOE-managed oxide SNF mentioned in the Report by variety of fuel types and volumes at each site?
10. Are the opportunities for potentially interested host communities to obtain grants to support their acquisition of sufficient knowledge of the implications of hosting a DWR and allow them to evaluate their interest in going further included in the DWR cost estimate? If so how much is

envisioned for each grant and how many does DOE anticipate? Will the grant extend to communities that currently host waste storage and potentially ship waste to the DWR? Will the planned outreach and education grants include these current host communities and anticipated impacts from shipping/transportation and resulting excess storage and/or process facilities?

Thank you for allowing our voice to be heard.

From: Alice McNally
Sent: Saturday, February 19, 2022 10:39 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal Interim Storage

To all parties,

Currently the nations radioactive waste is stranded in non-consent based facilities, as there is no Federal repository and at present it is illegal to move it until there is one operating.

I am writing with 2 concerns.

1. That waiting for a consent based facility to be found will slow down the process. What benefits could possible out way the risks for a community?
2. Is that indigenous and underserved locations will be singled out and not given a voice and forced or fooled into taking the waste.

This is problem that needs to be solved yesterday. There is no time to waste as the sea level is rising faster than predicted and Climate change is a huge risk to these temporary locations such as San Onofre, CA where over 1800 tons of radioactive spent fuel and now stranded only 108 feet from the surf.

Alice McNally


This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

From: Alice McNally
Sent: Friday, March 4, 2022 1:13 PM
To: Consent Based Siting
Subject: [EXTERNAL] remarks on CIS

DOE,
.Waste is now stranded indefinitely on sites Nationwide which are NOT CONSENT based as there is no place to put it.
. Don't Bribe communities to have to choose between health and safety and economics.
.Respect the public and be truthful. Stop making more waste and promoting new Nuclear and weapons
.Stop hauling nuclear waste through communities without consent
.Do your job to fairly find, fund and open a consent based disposal site now away from populated areas.

Alice McNally


This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

From: Meacham, Thomas

Sent: Friday, January 28, 2022 7:20 AM

To: Consent Based Siting

Subject: [EXTERNAL] DOE's discriminatory blackmail in "consent-based siting" of nuclear waste storage

Dear Madam/Sir:

It is blackmail and discrimination to tempt predominately Black, Indigenous, Hispanic or Latinx communities, or low-income or any communities already dealing with hazardous waste facilities with offers of jobs, infrastructure development, and social programs funding, in exchange for allowing the government to house nuclear waste consolidated interim storage facilities in their neighborhoods. Jobs, infrastructure development, and social programs funding are things a humane society would already be doing for its most vulnerable citizens, without holding a high-level nuclear waste "gun" to their heads.

BIPOC, low-income, and already heavily polluted communities should not be further exposed to one of the most hazardous substances ever generated by human society, highly radioactive irradiated nuclear fuel.

Respectfully yours,
Thomas S. Meacham

Sent from my iPhone

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

From: Kevin Mehren
Sent: Friday, March 4, 2022 12:57 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage - Submission from OurEnergyPolicy
Attachments: Consent-Based Siting RFI Response - OurEnergyPolicy.pdf

To Whom It May Concern,

Please accept the attached comments in response to the Department's RFI on consent-based siting and federal interim storage of nuclear waste. I am submitting these comments on behalf of the Our Energy Policy Foundation and members of our expert community.

Please contact me with any questions.

Kind regards,

Kevin Mehren | Program Director



529 14th St. NW, Suite 1150
Washington, DC 20045




This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

Submission to the U.S. Department of Energy's Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities

Submitted by OurEnergyPolicy, with summaries of expert opinions on the questions posed in the U.S Department of Energy's December 1, 2021, request for information. Document Number: 2021-25724

For any questions, please contact:
Kevin Mehren, Program Director
529 14th St. NW, Suite 1150
Washington, DC 20045



The responses to the questions below are the result of a roundtable discussion hosted by OurEnergyPolicy, an educational, non-partisan organization, on January 26, 2022, pursuant to Chatham House Rules. Each answer is intended to summarize the conversation as it pertains to each question, without individual attribution. The content does not necessarily represent the opinion of any one participant, nor does it express the view of OurEnergyPolicy, which does not advocate for any particular policy, regulatory or legislative approach, or technology.

Summarizing Expert Feedback from:

Alan Ahn, Third Way

Steven Curtis, Independent

Alex Gilbert, Nuclear Innovation Alliance

Joe Hezir, Energy Futures Initiative

Andrew Kadak, Kadak Associates

John Kotek, Nuclear Energy Institute

Edwin Lyman, Union of Concerned Scientists

Allison Macfarlane, University of British Columbia

Andrew Revkin, Columbia Climate School

Herschel Specter, Micro-Utilities, Inc.

Cindy Vestergaard, The Stimson Center

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

Participants agreed that allowing for self-determination is key in creating “buy-in” from communities when considering consent-based interim storage facility siting. Prior to any formal siting process, communities should be provided with unrestricted access to the resources, time, and independent (from the implementer) expertise required to inform them whether siting such a facility in their community would be of greater benefit or harm. Providing this support, especially when dealing with traditionally marginalized and underserved communities, will maximize the Department’s ability to take social equity and environmental justice concerns into account. The Department must empower communities to negotiate on their own terms regarding aspects of the process such as oversight and investment.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

The variable needs of Tribal, State, and local governments pose unique challenges. As one participant noted, “You can always find a community [interested in hosting a site] but finding a state [willing to agree to it] is a different matter.” In this context, several participants advocated for bringing states and communities into the process together at an early stage. Excluding states from the process until after a deal with a community is largely negotiated could increase the likelihood of state leadership “derailing” a final deal. Others disagreed and placed more importance on working with communities, echoing the Blue Ribbon Commission by saying that the process is “about being able to work with communities and to provide them with a situation in which they can trust and share, and then the states will come along. If you don’t have the community support, forget about the state.” It was also pointed out that states are likely to want various levels of input regarding the siting process, including oversight roles, access to funding, and the ability to negotiate with the Department that will be sustained for many years to come. So, while emphasis must be placed on the community itself, the process should be designed to take states into consideration since their approval will be needed.

[Regarding Tribal governments, they must be brought into the siting process at the local level.](#)

Other countries, Canada in particular, offer specific and relevant examples of how interim storage facilities can be integrated into tribal communities, while also highlighting the value of incorporating tribal knowledge to help inform siting and help further tribal relationships. Per one participant, Canada’s Nuclear Waste Management Organization has very actively engaged with a council of elders and youth, which provides counsel on the application of indigenous knowledge to Canada’s adaptive phased management approach as well as insights on supporting the development and maintenance of positive and productive relationships with aboriginal communities.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

It is likely that communities will want additional incentives beyond financial compensation in return for their consent. Previous projects, such as the Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico, serve as examples of how communities may benefit from a variety of incentives. The impact of WIPP on the community included numerous secondary benefits such as new job opportunities, and increased funding for education. Making the possibility of these benefits apparent at the outset and giving potential host governments the ability to help define the nature of the benefits, would likely increase the chance of community “buy-in” during the process.

Another potential incentive includes co-locating interim waste sites with clean energy facilities, as a way to improve a community’s prospects for consent. This would allow new clean energy employment opportunities, potentially improve the local environment, and help facilitate the clean energy transition. Co-locating interim waste storage sites with research facilities or is also an option.

A final suggestion from the conversation is that “in next year’s budget review, we should be seeking appropriations for grants that state, tribal, and local governments can apply for, allowing them to start studying this issue on their own. It should be made clear that those state tribal and local governments can negotiate what protections and benefits are going to be involved in a process like this.” Empowering these communities in this way is an essential “benefit” that must be included in this process.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

A key barrier referenced several times during conversation is the Department of Energy’s lack of expertise in conducting public outreach and engagement. This may be addressed by hiring neutral third parties that specialize in public engagement, or by expanding hiring to bring this expertise “in-house” at the Department. Various parties also recommended that the process would best be led by a waste management organization overseen by the United States’ domestic nuclear industry, as is done in Canada, Finland, Sweden, Japan, France, and Switzerland. Slight disagreement existed with one participant saying that the Department of Energy may not be the organization to lead the process but, “given where we are today, maybe it is the place where it has to start.”

A broader, and more fundamental, challenge is that of definitions. Per one participant, “a consent-based process has never been defined.” Various others agreed, adding that, more specifically, “who is providing the consent?” has never been addressed. A detailed approach that answers this question, or at the very least provides a framework for it, will likely be needed to ensure equitable and fair negotiations between key stakeholders. As stated during the conversation “If you’re to start a new [consent-based] process today, without having a much clearer description of what the process would be, you are almost forcing communities to make a decision upfront whether

they'd be willing to grant consent, just in order to start a consent-based process." One participant suggested that a definition of consent should be a "stepwise," tiered, process with "off-ramps" along the way. This process could reduce perceived barriers to participation by removing "an initial hurdle for a community to start the process." A similar problem exists with definitions for environmental justice. Who decides, and what are the criteria as they relate to the siting of nuclear waste storage sites? Several speakers mentioned that rigid definitions could actually be detrimental to the process and that a certain level of flexibility is needed in order to effectively and meaningfully address concerns over environmental justice as well as what "consent" means for various regions, states, and communities. Efforts must be made to prevent the process from becoming a question of "what is a community's price for accepting a facility that they do not want?"

Since states and the federal government must work together to solve the challenge of interim storage facilities, the topic of preemption must be addressed. The ability of states to preempt the federal government's decisions on siting is an inherent barrier to allowing communities to consent. States having the final say effectively strips agency away from the places that siting will most greatly impact. The Private Fuel Storage interim storage facility in Utah was referenced as an example of the complexities of such situations. The case raised serious questions about tribal sovereignty and states' rights. A participant voiced the opinion that obtaining consent from states should be the ultimate goal as, without their consent, the consent of a community is of little consequence. This viewpoint contrasted with several others who supported the idea, stated earlier, that states will "come along" with the decision of a community if the process is conducted properly. One participant cited the WIPP facility in New Mexico as an example of the state dropping objections to the facility after it was given oversight responsibilities through the Resource Conservation and Recovery Act (as explained in the Blue Ribbon Commission report).

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

Of the opinions offered, the majority agreed that the nuclear industry itself is a strong candidate to oversee the initiative. This would be beneficial as the nuclear industry's interests are aligned to promote the most efficient and effective implementation of a consent-based process. Giving responsibility to the private sector for waste disposal has been done successfully in other countries. "There is a successful model out there" where an industry sponsored panel is convened to review and produce recommendations with community input. Other countries have moved away from governments and ministries leading these initiatives, instead requiring industry to clean up nuclear waste and facilitate research through independent, not-for-profit, nuclear utility-run entities.

In contrast, some participants felt that, while the industry should certainly be a partner in the process and "clearly has a role as an implementer", the overall approach should be led by the federal government, which "has the long-term institutional structure to ensure implementation over many decades and perhaps centuries."

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

Confusion continues to exist around the hierarchy of parties needed to provide consent as part of the process. Communities, states, counties, all of the above? As stated by the Blue Ribbon Commission, it is especially difficult to advance plans for a storage facility without the consent of the state government, but it must be left up to the individual states to determine how they want to provide consent. Importantly, it was pointed out that the definition of consent at the state level does not need to be the same as at the community level. A “community has to be supportive of the siting of a facility, but a state government ultimately may not need to signal affirmation, but merely no objection.” WIPP was cited again as an example of a project where the state government never formally said “yes,” but instead, dropped its objections once certain concerns had been addressed.

Regarding jurisdictional lines, it’s likely that projects won’t always have clear delineations, and the process should be designed with enough flexibility to account for this and other challenges. Underscoring this idea, a participant stressed the importance of the individual community where the storage facility would be placed, saying that “if a community is not on board, a state will not be either.”

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

Various parties stressed that this question has been answered sufficiently by the Blue Ribbon Commission. Of particular importance is that funding should be provided so that communities may hire their own independent analysts to confirm whatever they are being told by the implementer. This is vital as communities must be able to independently verify the information they are being given if their consent is to be valid. Several participants stressed the importance of increasing access to educational opportunities for involved communities. Other participants disagreed with the idea of including a structured educational component, noting that education on nuclear issues has not been shown to change minds in this context. What is essential, they argued, is a willingness to listen, acknowledge, and address the concerns of those in affected communities as they arise.

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

As stated previously, participants agreed that the Department currently lacks the expertise required to meaningfully and effectively engage with prospective host communities. – “What’s really important here is that the Department of Energy hire people who know about public engagement and have the skill sets to facilitate” these interactions. “It is essential to have really top-notch people

doing this kind of work.” Hiring expertly trained facilitators and professionals experienced in public engagement is necessary for a successful consent-based process. “Public engagement is extremely important, and if they get this wrong, they may lose the entire project.”

The EPA’s Superfund program was suggested as a model for how the Department might more effectively engage with local, State, and Tribal governments. This program has decades of experience meaningfully engaging with various communities and governments. Elements of this program could be helpful in determining the appropriate role for the Department of Energy in public engagement on consent-based siting.

Another participant suggested the Department could implement a tool, akin to the [Thriving Earth Exchange](#), a program that the American Geophysical Union has run for several years, in order to help the Department connect with communities, states, and various other stakeholders. Sustained engagement and knowledge sharing will be vital, so creating a source of “robust and technically sound information” that every party can access and rely on will be key.

Area 3: Interim Storage as Part of a Waste Management System

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

Echoing the recommendations of the Blue Ribbon Commission, the roundtable participants were in agreement that any progress on interim storage must be linked to some activity related to permanent storage. “You can’t have a truly consent-based siting of an interim storage facility without any clear path toward final disposal.” The Administration needs to work with Congress to put forward legislation that will fix some problems in the existing law dealing with handling of the Nuclear Waste Fund and making progress on siting permanent repository(ies).

4. What other issues should the Department consider in developing a waste management system?

One participant suggested that the scope of the process could be broadened to consider more than just spent fuel management, in certain cases. “Many of these communities have some history with nuclear.” Expanding the scope to include other nuclear activity, as well as spent fuel management, could further entice communities that are already familiar with the industry. “It is important that the community feel that it’s a part of a long-term process.”

Thank you for the opportunity to submit this information. As noted above, the views expressed were those of the roundtable participants and not those of OurEnergyPolicy, a non-partisan educational organization that does not advocate policy or technology positions.

From: Ian Miller
Sent: Tuesday, November 30, 2021 6:56 PM
To: Consent Based Siting
Subject: [EXTERNAL] Comments on a consent-based siting process
Attachments: Miller DOE Siting Comments.pdf

Please find attached my comments re a potential consent-based siting process for DOE radioactive waste management facilities.

- Ian Miller

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To: Office of Spent Fuel and Waste Disposition, Office of Nuclear Energy, Department of Energy

From: Ian Miller



Nov. 30, 2021

Re the Area 1: Consent-Based Siting Process question 4: *What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?*

I am a retired consulting engineer. During my career I was involved in siting and long-term risk assessments for a wide range of radioactive waste management facilities. I worked on projects in the USA, Canada, England, Spain, Holland, France, Hungary, Australia, Korea, and Japan.

Few of the projects that I worked on ever came to fruition. Some of them failed due to poor site selection or poor site characterization, but the remainder failed because of local opposition. The pattern was generally the same: if any politician dared to support a proposed project their political opponents seized on the opportunity to infect the population with fear, and the supporting politician lost their next election. That intimidated the politicians, and few dared step forward to support a proposed project. I saw this happen in every country, and the prime example was the loss of the Yucca Mountain Project.

I am convinced that if the Department of Energy proceeds with a siting project for interim storage or for disposal it will fail, for the same reason, regardless of how well-intentioned and well-operated the project is.

The reality is that the responsibility for radioactive waste management lies with Congress, and with state and local levels of government– and not with the Department of Energy. There will be no success unless the political parties that control Congress forge a long-term agreement to remove the waste-management program from the arena of partisan politics. (That will probably require a semi-independent agency to operate the program, something like NASA or the TVA, rather than the DOE).

That's not all: both State and local jurisdictions have the power to stop a project, one way or another. Even NGO's have the power. No investments beyond preliminary site screening should be made in locations until the host state's political parties and the local parties have agreed on the ground rules: no secrets allowed, science-based decisions, and an independent safety authority. At an appropriate point in any proposed facility's development the locals have to vote to support the project, then the state legislators have to vote for it, and finally the Congress has to approve it.

So that is my advice for the DOE: the first consent that is required is that of the political parties that control Congress, so turn your focus in that direction. Try to help the parties to jointly take on the responsibility for politics-free radioactive waste management. That's what the country needs.

Thank you for the opportunity to comment.

A handwritten signature in cursive script that reads "Ian Miller".

From: Tansey Moore
Sent: Friday, March 4, 2022 12:14 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: CBS RFI Cover Letter 3_4_22 Final.pdf; NETWG CBS Comments Memo Final.pdf



Dear Office of Nuclear Energy,

The Nuclear Energy Tribal Working Group (NETWG) looks forward to working with DOE to help determine the best process to identify federal interim storage facilities. Attached you will find NETWG's cover letter and comment memo in response to the Request for Information. Please contact me if you have any questions.

Sincerely,

Tansey Moore
National Conference of State Legislatures
Tribal Working Groups Specialist
Energy Environment and Transportation



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March 4, 2022

U.S. Department of Energy
Office of Nuclear Energy
1000 Independence Ave. SW
Washington DC 20585

Organization: Nuclear Energy Tribal Working Group (NETWG)
Contact Name: Tansey Moore
Address: [REDACTED]

Re: Docket ID DOE-HQ-2021-0032- Comments on the Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities

Dear Office of Nuclear Energy,

On December 1, 2021, the Department of Energy (DOE) Office of Nuclear Energy (NE) published a notice in the Federal Register for a Request For Information (RFI) on how to site Federal facilities for the temporary, consolidated storage of spent nuclear fuel using a consent-based approach. (86 FR 68244).

The Nuclear Energy Tribal Working Group (NETWG) consists of 12 active member tribes who work alongside DOE to maintain and strengthen the government-to-government relationship between DOE-NE and Indian Tribes, consistent with DOE's American Indian Policy Act. This effort is supported by a DOE Cooperative Agreement with the National Conference of State Legislatures (NCSL).

NETWG's comments to the questions posed in the RFI are attached. However, NETWG would like to highlight some key considerations that are fundamental to the implementation of a fair and transparent Consent-Based Siting process:

- Tribal nations are sovereign governments and must be offered the same consideration as states.
- DOE's outreach should be systematic, transparent, timely and must meet the needs of different audiences, including tribes.

- Consideration should be given to establishing a third-party, independent entity to manage the waste management process and remove it from the oscillations of Congress and Administrations.

NETWG appreciates the opportunity to comment and looks forward to working with DOE to help determine the best process to identify federal interim storage facilities. If you have any questions, please feel free to contact Tansey Moore at [REDACTED]

Sincerely,

NUCLEAR ENERGY TRIBAL WORKING GROUP

Attachments: (6 pages)



**DEPARTMENT OF ENERGY CONSENT-BASED SITING
COMMENT MEMO**

Organization: Nuclear Energy Tribal Working Group (NETWG)
Contact Name: Tansey Moore
Address: [REDACTED]
Phone Number: [REDACTED]
E-mail: [REDACTED]

Area 1: Consent-Based Siting Process

- 1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?**
 - It's critical to understand the federal government's federal trust responsibilities to Indian tribes under the National Environmental Policy Act (NEPA) and not conflate Environmental Justice (EJ) efforts with NEPA. DOE needs to further define how environmental justice considerations will be used to support the decision-making process, but these considerations are not a replacement for the NEPA processes.
-
- 2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?**
 - The Blue-Ribbon Commission (BRC) report notes "the cooperation of affected state governments will be vital to the success of the nuclear waste program going forward." The report also mentions tribal and local support is not "sufficient to overcome state-level opposition." DOE's past efforts to site a repository amid strong opposition from the elected leaders of potentially affected parties overlooked the intent of the Commission and the overarching idea that governments (federal, tribal, and state) must work equally together to solve our country's nuclear energy challenges. DOE needs to adhere to this principal.

- The United States holds legal title to tribal lands, but the lands must be managed in unison with the equitable title resting with tribes. Therefore, it is the right of federally recognized tribes to make development decisions in Indian Country, without state objection or oversight.
 - There should be an agreed upon definition of what consent means for the tribes, states, local governments and officials.
-

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

No comments offered at this time.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

- The inaction of the federal government to site a permanent repository poses a barrier, as communities have no certainty about the future of the waste.
 - Some tribes may not have staff capacity to properly engage with DOE on consent-based siting.
 - Tribes often have connections to lands other than those where they currently reside, therefore, a proper cultural affiliation study should be completed to identify traditional homelands.
 - Sufficient funding will need to be provided for tribal and local communities to engage in the consent-based siting process.
 - DOE will need to conduct an in-depth needs assessment to fully understand all the barriers a community may face. This needs to be accounted for in DOE's project timeline.
 - The federal government's lack of action on this topic has created a significant lack of trust which will need to be overcome – especially among American Indian and Alaska Native communities.
 - Misinformation shared across a variety of platforms can cause confusion and has the potential to sabotage the decision-making process.
-

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

- DOE must be truthful, honest, fair and equitable when engaging with all (tribal and local) communities.
- DOE must provide information in writing stating the length of time the waste will be stored, the plan for retrieving and moving the waste to a permanent repository and any clean-up efforts that may impact the community. If DOE fails to meet these benchmarks, the remedy must be clearly stated.
- Share lessons learned from the establishment of the Waste Isolation Pilot Project or the process that was used to select Yucca Mountain.
- Share experiences and outcomes from the work of the Nuclear Waste Negotiator.
- Ensure that sufficient funding is available throughout the entire process to ensure sustainable engagement.

- Outreach should be systematic, transparent, timely and must meet the needs of different audiences.
 - MOUs can be used to demonstrate DOE's commitment to early consideration of treaty and reserved rights in agency decision-making and regulatory processes. For example, the Department is a signatory to the Memorandum of Understanding (MOU) Regarding Interagency Coordination and Collaboration for the Protection of Tribal Treaty Rights and Reserved Rights; this MOU intends to enhance the interagency collaboration to protect treaty and reserved rights and to fully implement federal government treaty obligations.
-

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

- A suggestion would be to partner with NETWG to identify tribal representative(s) to contribute to an advisory group on consent-based siting to ensure tribal perspectives are included in discussions. The advisory group would not supplant tribal consultation.
-

7. What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

- The Memorandum of Understanding on Interagency Coordination and Collaboration for the Protection of Tribal Treaty Rights and Reserved Rights should be considered in implementation of the consent-based siting process. Under the U.S. Constitution, treaties are part of the supreme law of the land, with the same legal force and effect as federal statutes. Under this principle, and its trust relationship with federally recognized tribes, the United States must honor the rights reserved through treaties, including rights to both on and, where applicable, off-reservation resources, and to ensure that its actions are consistent with those rights and their related protections.
 - The provision of sufficient and sustained Congressional appropriations, and removal of the program from DOE to a third-party entity to ensure continuity in carrying out the mission.
-

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

- A comprehensive understanding of and adherence to the principles of tribal sovereignty is critical to the success of this project. DOE should have knowledge of tribal land jurisdictions which are typically located within the geographic boundaries of a state(s) but are not political sub-jurisdictions of the state. Geographic boundaries should be thought of as adjacent jurisdictions.
- In the past, DOE did not let tribes reconcile consent-based siting issues for themselves and did so through federal government oversight.

- DOE should make a good faith effort to engage early and often with tribes so that they can ask questions and deliberate on the issues.
 - Steps must be taken to ensure that the federal government institutionalizes consent-based siting, otherwise, it remains subject to the oscillations of Congress and changing Administrations and progress will suffer.
 - DOE should make the consent-based siting process a federal initiative to guarantee the siting is completed.
 - The capacity of tribes from both a resource perspective and a staffing perspective is often limited. There needs to be a mechanism in place to ensure tribes have the same capacity as states to fully engage with DOE.
-

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

- Financial resources are needed to ensure potentially interested communities have their questions answered. There is a need for interested communities to hire legal, technical, economic, scientific and safety experts to determine whether hosting of interim storage facilities is economically and well suited for the community and to ensure long-term stewardship and continuity.
 - Ongoing public meetings must be hosted to ensure information is being shared.
 - Ongoing education must be provided for community members and must take into account a wide spectrum of knowledge and understanding of the relevant issues.
 - Sustained funding will be necessary to carry out all the activities related to the siting of an interim storage facility.
-

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

- To maximize the Department's opportunities for mutual learning and collaboration with potentially interested communities.
 - It will be beneficial for the Department to review the historical information such as the BRC Report and lessons learned.
 - Collaboration with an advisory committee that has some similar experience on siting issues may be helpful.
 - It will be important to develop elimination criteria for consent-based siting so that potentially interested communities will be able to identify the criteria such as flood plain zones, etc.
 - It may be helpful to observe other countries and nations to determine lessons learned from their specific siting example.
-

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

- The Department must be consistent in its implementation of existing laws and policies engaging with tribes. The Department already has several laws and policies in place recognizing the importance of both tribal sovereignty and trust responsibility. There is a disconnect between existing policies and current departmental implementation, which is a key area the Department can begin to improve. Several existing policies, namely: DOE's Indian Policy, Executive Order 13175 on consultation and cooperation, and the Nuclear Waste Policy Act, all may be used as frameworks for the Department in engaging with tribes.
 - To effectively engage with local, state and tribal governments, it would be beneficial for DOE to bring in a third party into the process that has more objectivity since DOE needs to site federal facilities for the temporary consolidated storage of spent nuclear fuel.
-

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

- Potentially interested communities need information about the Funding Opportunity Announcement (FOA). DOE will need to make a broad outreach to all communities.
 - Information needs to be available to tribes to assess the siting questions. For example, the timeframe DOE is looking at for consent-based siting should be included in a FOA.
 - Siting criteria regarding size, access and remote location information should be included to potentially interested communities.
-

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

- To ensure considerations of social equity and environmental justice are addressed, the Department must determine how it will balance varying perspectives while accounting for tribal sovereignty and individual state rights. Differing views between Indian Country and a state should be given great consideration and at minimum, the same treatment as state-to-state opposition. Before the Department adopts and implements a consent-based approach, it must appropriately recognize state approval is not necessary for decisions made on tribal land. Siting of spent nuclear fuel and high-level waste is challenging with the expectation that some level of opposition will always exist.
-

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

No comments offered at this time.

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

No comments offered at this time.

4. What other issues should the Department consider in developing a waste management system?

- DOE must adhere to the definition of Indian Country in developing a waste management system. Indian Country is defined as “all land within the boundaries of an Indian reservation, regardless of ownership.” Therefore, land located within a reservation but owned by a non-Indian is still Indian Country. Additionally, rights-of-way through reservation lands (e.g., state or federal highways) are a part of Indian Country. Indian Country extends outside of reservations, including “dependent Indian communities” as well as “trust” and “restricted” allotments of land.
- Congress would also play a central role in ensuring the accountability of a new waste management organization in several ways. First, Congress would define—through enabling legislation—the mission, structure, responsibilities and powers of the new organization. Specifically, Congress must define the following:
 - The national nuclear waste policy framework within which the organization must operate.
 - The institutional form of the new organization.
 - Financial resources and funding mechanisms for the new organization.
 - The roles of state, local, and tribal governments in siting waste management and disposal facilities, including the nature of public funding for state, local, tribal and other stakeholder participation.
 - The organization’s responsibility to promote the social and economic well-being of communities affected by waste management facilities, as well as the general nature of incentives to be provided and how states, tribes, and localities are to be funded during the siting process.
 - The BRC recommends that to be successful, “the new waste management organization must find ways to address state concerns, while at the same time capitalizing on local support for proposed facilities”. These statements imply that decisions made at the state level are valued more than those made at the local or tribal level.

From: Eric Morris
Sent: Wednesday, March 2, 2022 5:22 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Eric Morris



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From: John Starkey
Sent: Monday, February 28, 2022 11:45 AM
To: Consent Based Siting
CC: Trunzo, Alisa
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage - ANS Response (Attached)
Attachments: 02.25.22 - DOE RFI - Consent-Based Siting Process - ANS Comments.pdf

Office of Nuclear Energy, Department of Energy

Good afternoon:

Please find attached the American Nuclear Society's response to the RFI (Document Citation 86 FR 68244) on using a consent-based siting process to identify federal interim storage facilities.

Please also feel free to reach out should you have questions.

Sincerely,

John Starkey | Director, Public Policy



Advancing nuclear science and technology for the benefit of humanity

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February 25, 2022

Office of Nuclear Energy
U.S. Department of Energy
1000 Independence Ave. SW
Washington, DC 20585

Attention: Alisa Trunzo

Subject: **Response to 86 FR 68244: American Nuclear Society Response to Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities Consent-Based Siting of Federal Interim Storage Facilities**

On behalf of the approximately 10,000 nuclear technology professionals that make up the [American Nuclear Society](#) (ANS), we are pleased to provide comments on the Department of Energy's (DOE's) "Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities" (*Federal Register*, December 1, 2021).

First, we provide our perspective on nuclear power and the unblemished record of safety associated with storage and transportation of used nuclear fuel. As you are well aware, nuclear power generates roughly 20 percent of the country's electricity and more than half of its greenhouse-gas-emissions-free electricity. We anticipate significant expansion of the country's nuclear generation because, unlike some other energy sources, nuclear power can provide clean energy around the clock and can furnish high-temperature steam for industrial applications alongside its traditional electricity generation role. As with all technologies, nuclear power generates some waste, albeit a very small volume compared to other energy sources. The commercial nuclear industry has a stellar record managing its waste and in particular the used fuel that is a by-product of energy production. Nuclear plants store their used fuel assemblies safely on-site in used fuel pools and in robust, passively cooled dry storage systems. When it is necessary to transport used fuel, it is done by truck, rail, or barge, using established and proven processes and inside protective overpacks that meet rigorous regulatory requirements and provide ample protection against radiation exposure. During the entire history of commercial used fuel management—in excess of six decades—no member of the public has been harmed by a radiation release associated with the storage or transportation of used fuel.

As documented in the Nuclear Regulatory Commission's continued storage rule,¹ used fuel can be stored indefinitely at nuclear power plant sites with minimal environmental impacts. Nevertheless, that is not the optimal solution for managing the material. Consolidated interim storage could enable closure and beneficial societal reuse of decommissioned sites, lower used fuel storage requirements at operating nuclear power plants, and reduce federal

¹ "Continued Storage of Spent Nuclear Fuel." *Federal Register* 56238, Vol. 70, No. 182. Nuclear Regulatory Commission. September 19, 2014.

outlays (damage payments) for the government's failure to fulfill its obligations under its contracts with nuclear plant operators. Waste management options include recycling, which can be deployed to recover and reuse fissile material, and transmutation technology, which can modify the nature of some of the remaining waste. Nevertheless, there will always be long-lived radioisotopes that require extended isolation from the biosphere (i.e., permanent disposal). New technologies like borehole disposal offer potential alternatives to the traditionally considered approach of mined geological disposal. We advocate that the government develop a flexible and adaptive integrated waste management program that includes the ultimate disposal of long-lived radioactive material. Such a program should accommodate technological advances that will inevitably occur and not preclude our country from taking best advantage of the resources in the material that we currently refer to as waste.

We commend the DOE for issuing its RFI on consent-based siting for consolidated storage facilities. Even if the anticipated expansion of nuclear energy does not occur, the existing inventory of used fuel plus additional amounts that will be generated by currently operating plants will not go away by itself (at least, not for a very long time). Consistent with the Atomic Energy Act and the Nuclear Waste Policy Act, the federal government has an essential role to play in the management of used fuel and high-level radioactive waste. However, it has now been nearly a quarter of a century since the government was supposed to begin removing used fuel from reactor sites. For more than a decade, the government has had no program in place to fulfill its statutory and legal obligations. We interpret the DOE RFI as a signal that the government intends to reestablish a workable program to discharge these responsibilities.

As we discuss above, consolidated storage is but one element of an integrated waste management program, but one that could provide benefits to stakeholders around the country. Numerous organizations, including ANS,^{2,3,4,5,6} have made recommendations about comprehensive measures needed to put the U.S. program on a path to success. We will not opine further on such measures in these comments, but we hope that this RFI will serve as a starting point for a more comprehensive conversation about governance reform, funding reform, ultimate disposal, and other matters critical to the success of the U.S. nuclear waste management program. Because these are matters of national policy, fundamental changes to the country's program must be authorized and funded through congressional action. In the meantime, the executive branch of government should take what measures it can to enable ultimate success.

² American Nuclear Society. Position Statement #76: "Interim Storage of Used or Spent Fuel." February 2017. <https://cdn.ans.org/policy/statements/docs/ps76.pdf> (current as of Feb. 23, 2022).

³ American Nuclear Society. Position Statement #18: "Transportation of Radioactive Materials." July 2021. <https://cdn.ans.org/policy/statements/docs/ps18.pdf> (current as of Feb. 23, 2022).

⁴ American Nuclear Society. Position Statement #80: "Licensing of Yucca Mountain as a Geologic Repository for Used Nuclear Fuel and High-Level Radioactive Waste." February 2017. <https://cdn.ans.org/policy/statements/docs/ps80.pdf> (current as of Feb. 23, 2022).

⁵ American Nuclear Society. Position Statement #22: "Creation of an Independent Entity to Manage U.S. Used Nuclear Fuel." July 2015. <https://cdn.ans.org/policy/statements/docs/ps22.pdf> (current as of Feb. 23, 2022).

⁶ American Nuclear Society. "Issue Brief: A Proposal for Progress on Nuclear Waste Management." February 2020. <https://www.ans.org/file/1245/Progress+on+Nuclear+Waste+Management.pdf> (current as of Feb. 23, 2022).

In the attachment to this letter, we provide responses to some of the questions in the DOE RFI. Those responses were developed by ANS members with extensive technical and managerial experience in the field of used fuel and high-level waste management, as well as considerable background interacting with stakeholders and the public on nuclear waste-related matters. Over the past decades, the U.S. government and other organizations have completed myriad studies, analyses, and reports in the field of waste management, and the DOE should take advantage of this information base as it formulates its next actions. Numerous public and private initiatives to establish consolidated interim storage facilities in the U.S., both historical and ongoing, provide important lessons learned. The DOE should also factor in the large and growing international experience base in used fuel management, which includes the successful implementation of consolidated interim storage in a number of countries.

ANS looks forward to working with the DOE to reestablish an integrated used fuel management program that includes interim storage. If you have any questions related to these comments, please feel free to contact me at ([REDACTED]) or [REDACTED]

Sincerely,

Steven P. Nesbit

A handwritten signature in black ink, appearing to read 'Steven P. Nesbit', followed by a horizontal line.

President
American Nuclear Society

Attachment

American Nuclear Society (ANS) Responses to Specific Questions in the Department of Energy's (DOE's) December 1, 2021, Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities

The DOE RFI questions are provided below, along with ANS responses. In some cases ANS does not provide a response.

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

The DOE should conduct a broad and transparent process and reach out to as many communities as possible. The DOE should not encourage or discourage communities from participating in a consent-based siting process based on the DOE's perception of the economic or demographic status of the community. In a consent-based process, the community will have the opportunity to weigh factors and arrive at its own decision as to the desirability of hosting a facility.

The process of siting, construction, operation, closure, and long-term monitoring of a nuclear waste storage site should have minimal environmental impacts (including radiation) but positive economic benefits to the host community. The environmental impact statements for the proposed private consolidated storage facilities in Texas⁷ and New Mexico⁸ support this point.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

No comments provided.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

The DOE should provide general information on the nature and characteristics of a potential interim storage facility. It should also provide suggestions of related facilities, activities, and benefits in which a hosting entity might have interest, such as co-location of research and development centers and educational partnerships. The DOE should be flexible and prepared to discuss any interests and ideas of a potential host.

⁷ NUREG-2239. "Environmental Impact Statement for Interim Storage Partners LLC's License Application for a Consolidated Interim Storage Facility for Spent Nuclear Fuel in Andrews County, Texas." U.S. Nuclear Regulatory Commission. July 2021. <https://www.nrc.gov/docs/ML2120/ML21209A955.pdf> (current as of Feb. 23, 2022).

⁸ NUREG-2237. "Environmental Impact Statement for the Holtec International's License Application for a Consolidated Interim Storage Facility for Spent Nuclear Fuel and High Level Waste: Draft Report for Comment." U.S. Nuclear Regulatory Commission. March 2020. <https://www.nrc.gov/docs/ML2006/ML20069G420.pdf> (current as of Feb. 23, 2022).

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

Historically, efforts to site a consolidated interim storage facility have foundered due to opposition from the host state. The lack of a program to develop a permanent disposal facility has proven to be a barrier to ongoing attempts to site private interim storage facilities in Texas and New Mexico. The existence of an integrated waste management program addressing storage, transportation, and disposal, as opposed to one focused only on interim storage, would help address these concerns.

In recommending establishment of a new waste management organization outside of the DOE, the Blue Ribbon Commission observed that the DOE management approach is not well suited to building and sustaining the degree of trust and stability necessary for a successful integrated waste management program.⁹ The DOE should be willing to work with potential hosts on alternative governance structures, recognizing that congressional action would be needed to implement a new approach.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

The DOE should communicate openly and honestly with potential hosts about plans and expectations. These communications would be enhanced if there were an integrated waste management program in place, or at least under development. Ultimately, understandings related to duration of storage should be codified contractually or through some other mechanism acceptable to the hosts.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

No comments provided.

7. What other issues, including those raised in the *Draft Consent-Based Siting Process* ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

No comments provided.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

Lack of trust in the DOE as a dependable, long-term partner may be a barrier for some states, tribes, and communities. The DOE should be prepared to invest in long-term relationships with host communities and other stakeholders. The DOE should also be amenable to working with potential hosts on alternative governance structures, recognizing that congressional action would be needed to implement a new approach. See also the response to Area 1, #4.

⁹ “Blue Ribbon Commission on America’s Nuclear Future: Report to the Secretary of Energy.” January 2012. https://www.energy.gov/sites/default/files/2013/04/f00/brc_finalreport_jan2012.pdf (current as of Feb. 23, 2022).

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

For communities that are not already hosts to nuclear technology facilities, the DOE should consider providing opportunities to government officials and other leaders to visit communities that host nuclear power plants, independent spent fuel storage installations, fuel fabrication plants, etc.

The DOE should also be prepared to provide reasonable resources to interested potential hosts for the purpose of conducting independent assessments and obtaining external support (technical, legal, etc.).

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

The DOE should consider supporting joint technical or social research projects with potentially interested communities and should seek to involve local and regional business, educational, and research institutions in such work, where feasible.

The DOE should consider a program like the Gateway for Accelerated Innovation in Nuclear (GAIN) program to enable interested host entities to access national laboratory and United States Geological Survey resources.

The DOE should refer communities to respected nongovernmental organizations that are not identified directly with the nuclear industry or with antinuclear groups. Such organizations would include colleges and universities, professional societies (e.g., ANS, the Health Physics Society, the Institute of Nuclear Materials Management), and pragmatic environmental organizations.

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

The DOE should be open to partnership and governance arrangements that can be adjusted to local, State, and Tribal desires (see also the response to Area 1, #4). The DOE should be prepared to invest in long-term relationships with host communities and other stakeholders (see also the response to Area 2, #1). The DOE should be prepared to leverage the range of benefits and authority-sharing possibilities available to the federal government.

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Communities and governments need the ability and resources to develop their own information independently, rather than being forced to rely solely on federal government experts. See also the responses to Area 1, #3 and Area 2, #2 and #3.

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

See the response to Area 1, #1.

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

Co-location of facilities is not required for a successful integrated waste management program. Depending on the characteristics of the program, there may be advantages and/or disadvantages to co-location, but little more can be said in the absence of an integrated program.

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

We are skeptical that a consent-based interim storage process will be successful in the absence of an integrated waste management program that also addresses permanent disposal.

4. What other issues should the Department consider in developing a waste management system?

We note that an integrated waste management system is itself only a part of a clean, reliable national energy system, including nuclear power and other energy resources.

The design of each part of the integrated waste management system (e.g., storage, transportation, and disposal) and associated research and development must work together to enable a safe, efficient, and affordable outcome.

In developing a federal interim storage facility or facilities, the DOE should consider the range of needs over the life of the facility. Those needs include monitoring the condition of storage systems and, potentially, remediating the systems and/or repackaging the spent fuel.

From: Judith Norman
Sent: Monday, February 28, 2022 6:17 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

To the DOE,

As a resident of Texas, I object strongly to the idea that only people who live very close to the final storage place of highly radioactive waste can weigh in on the question of storage. What about all the people whose aquifer water is contaminated by water irradiated as it soaks into the repository? What about people whose home is irradiated over several days when a train was derailed nearby due to sunkinks during a heatwave? What about workers who were glad to have a well-paying job at the repository, but were exposed to radioactive waste on the job (as happened in a New Mexico repository where the radioactive waste from the Hanford Nuclear Site was being stored). Nobody should be asked to consent to such a dangerous risk. Thank you,

Dr Judith Norman

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From: Tim Smith
Sent: Thursday, March 3, 2022 12:31 PM
To: Consent Based Siting
Subject: [EXTERNAL] Comments of the Decommissioning Plant Coalition
Attachments: DPC_CBS_RFI_Response_Final 3-4-22.pdf

Please find attached a cover letter and attachment from Mr. Wayne Norton, Chairman of the Steering Committee of the Decommissioning Plant Coalition (DPC) representing the DPC's response to DOE's Request For Information on using a consent-based siting process to identify federal interim storage facilities (86 Fed. Reg. 68,244 (Dec. 1, 2021)). We appreciate the efforts of the Department in fostering this initiative. We would be pleased to engage in further dialogue.

Regards,

Timothy Smith

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Tim Smith
Governmental Strategies, Inc.

[REDACTED]
[REDACTED]
[REDACTED]



March 4, 2022

Dr. Kim Petry
Acting Deputy Assistant Secretary
for Spent Fuel and Waste Disposition
U.S. Department of Energy
Office of Nuclear Energy
1000 Independence Avenue, S.W.
Washington, DC 20585

Submitted via consentbasedsiting@hq.doe.gov

Subject: Decommissioning Plant Coalition Response to DOE's RFI on Using a
Consent-Based Siting Process to Identify Federal Interim Storage Facilities,
86 Fed. Reg. 68,244 (Dec. 1, 2021)

Dear Acting Deputy Assistant Secretary Petry:

The Decommissioning Plant Coalition* (DPC) appreciates the opportunity to provide comments in response to the subject request for information. As discussed more fully in the attachment to this letter, the DPC has long been supportive of efforts to develop public or private centralized interim storage (CIS) capacity as a critical component of an integrated spent nuclear fuel (SNF) and high-level nuclear waste (HLW) management program.

The need for a successful consent-based siting process has become increasingly evident over the past two decades, as the Congress and the Executive Branch have been unable to otherwise address the challenge of siting, constructing, and operating any of the necessary components of an integrated management system. Although our companies safely manage this material and will continue to do so as long as SNF remains on our site, it is not without additional and in some cases unnecessary burden. This failure has not only exacerbated the government's liability for its partial breach of contract but has imposed a burden on the communities in which our plants formerly operated, a burden for which their consent was never requested or granted.

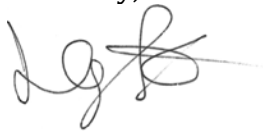
* The DPC is composed of 12 companies who own sites where all nuclear generating facilities have permanently ceased operation and are undergoing decommissioning. These sites/facilities are in California, Connecticut, Florida, Illinois, Maine, Massachusetts, Nebraska, Vermont and Wisconsin.

The failure of the federal government to fulfill contractual commitments established 40 years ago makes clear that, as written, the Nuclear Waste Policy Act, as amended is unlikely to be successfully implemented nor relied upon to establish a multi-generational waste management program. In parallel with, and informed by, the follow-on activities to the RFI, we believe it essential that DOE establish a high-level working group (that includes non-federal interests) to develop a comprehensive legislative amendment package that firmly establishes a consent-based process for both interim storage and permanent disposal facilities, as well as the critical issues of enterprise governance and sustained funding in return for the billions of dollars that are ratepayers have contributed to the federal Nuclear Waste Fund.

Given our expectation that this effort will result in the continued storage of SNF/HLW at our sites for a decade or more, we reiterate our belief that the DOE should exercise authority under existing contracts to prioritize the removal of the material indefinitely stranded at our sites. The simple reality is that but for the government's failure several of our member companies would have gone out of business and the sites made available for repurposing over a decade ago. Over the next decade(s) more will find themselves in this posture and our communities and companies will be forced to operate as de facto federal interim storage sites without consent.

We would be pleased to address any questions that might arise from our views and comments.

Sincerely,

A handwritten signature in black ink, appearing to read 'Wayne Norton', with a stylized flourish at the end.

Wayne Norton
Chair, DPC Steering Committee

Attachment

Decommissioning Plant Coalition Response to DOE's RFI on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Fed. Reg. 68,244 (Dec. 1, 2021)

General Comments:

The Decommissioning Plant Coalition[†] (DPC) appreciates and supports this initiative. Despite the efforts of many of our elected federal, State and local representatives, the inability of Congress and the Executive Branch to agree on a path forward for the Nation's effort to address the challenge of siting, constructing and operating facilities for the long-term management of the nation's spent nuclear fuel (SNF) and high-level nuclear waste (HLW) has resulted in a de facto national policy that strands this material at our sites indefinitely. The provisions of the 1982 Nuclear Waste Policy Act and its 1987 amendments (NWPA) have become increasingly ignored; not only has this exacerbated the government's liability for partial breach of the spent fuel contract but it has undermined trust in the agency and imposed a burden on the communities in which our plants formerly operated (as well as our companies) a burden for which their consent was never requested nor granted.

Beginning with our early participation in the programmatic review undertaken by the Blue Ribbon Commission on America's Nuclear Future (BRC), the DPC has advocated the establishment of consolidated interim storage (CIS) capacity as a key element of an integrated program for the management of SNF and HLW. As the BRC indicated in its final report, the benefits of such capacity include, among others, the ability for the government to begin meeting its obligations and reduce taxpayer liabilities, provide flexibility for the waste management program and incrementally develop public confidence in the waste management program. Given the expected timeframe for the development and implementation of a consent-based interim storage program, we would reiterate the BRC recommendation for priority removal of material stranded at our sites.

As suggested in our January 15, 2021 letter to then President-elect Biden, the DPC believes that the establishment of a consent based SNF/HLW regime requires a new discussion with State, Tribal and local governments that entails not just the economic benefits that might be derived from a facility (and/or associated facilities), but a meaningful engagement with and the involvement of these governmental authorities in the programmatic and regulatory framework. Given the expected lifetime of these facilities, we must address their legitimate safety, security and equity issues at the earliest stage.

[†] The DPC is composed of 12 member companies who operated nuclear energy generation plants at sites in 9 states stretching from Maine to California. All units at these sites have permanently ceased operation and are in various stages of decommissioning. For some, the only remaining nuclear activity at the site is the safeguarding of NRC licensed dual purpose storage and transportation systems with spent nuclear fuel (SNF) or greater-than-class-C nuclear waste (GTCC). Absent the failure of the federal government to fulfill statutory and contractual obligations, some of our member companies would have gone out of business and the sites made available for repurposing over a decade ago.

It is clear that neither the Executive nor Congressional branches of the federal government are prepared to pre-emptively enforce site selection for any part of an integrated nuclear waste management system. While the DPC has historically supported the completion of the Yucca Mountain license application, we conclude that the NWPA as written is unlikely to be successfully implemented or relied upon to establish a lasting management program. Accordingly, in addition to the DOE's efforts to establish a federal CIS siting process, we believe that the DOE must establish a high-level working group involving an array of stakeholders to develop a comprehensive legislative amendment package that gives fullest consideration to the role that a multi-generational federal and/or private CIS program plays in an integrated SNF/HLW management program. We urge this be accomplished in parallel with, and informed by, the follow-on activities resulting from responses to this RFI. There are broadly defined governance and budgetary resource issues that impact not just the path toward the establishment of federal CIS capacity, but a truly integrated program. The BRC provided some excellent thinking on these issues and their recommendations should be a part of the working group mandate.

Area 1: Consent-Based Siting Process:

In General:

The RFI lists 7 specific questions. In general, we believe that State, Tribal and local governments need to be provided appropriate resources for engagement with the federal government on all aspects of the program that could lead to federal CIS capacity. As the elected representatives of their citizens, they should be encouraged and empowered to develop enforceable agreements that clearly identify and delineate the circumstances by which such capacity is developed and operated. We do not believe the development of a "one size fits all" template is necessary or useful. Congress should refrain from attempting to define consent prior to the development of an agreement responsive to these governmental entities needs. Responses to selected specific questions follow.

Question 2: What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

The leaders of these governmental entities are the elected representatives of their citizens, broadly defined affected persons. As such, they should be involved from the beginning of any discussion, and with the provision of appropriate technical resources, be involved in developing the nature of any potential facility and related matters to ensure equities are addressed in an enforceable agreement.

Question 3: What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

This is perhaps best left for the responses of these governmental entities, but ancillary facilities in support of either a CIS or repository, research and educational capabilities, infrastructure investment are all likely candidates. Most importantly, these entities will need to be given meaningful roles for the long-term planning decisions on the overall spent fuel management program that are to be made.

Question 4: What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

Current barriers include the lack of any program leading to the development of a permanent geologic disposal facility, current restrictions that unduly link the siting, licensing and operation of such facilities to progress on the proposed Yucca Mountain repository license and perhaps, most importantly, the lack of direction/policy committing the federal government to enter into an enforceable and durable "consent agreement" with State, Tribal or local governments. There is a large "trust deficiency" in the DOE's ability to implement a decades or centuries long SNF/HLW management program. These impediments can only be addressed through commitment to the establishment of a flexible but enforceable consent regime.

Area 2: Removing Barriers to Meaningful Participation:

In General and Questions 1 and 2 and 5:

Question 1: What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

Question 2: What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

Question 5: What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

The single largest barrier to meaningful participation in a consent-based siting process is the lack of financial and technical resources that can assure citizens that their State, Tribal or local government leaders can provide independent judgment about a proposal. This can and should be mitigated through "no strings attached" grants. There is an abundance of resources and organizations (NGOs and others) available to inform these governmental leaders and their citizens about the nature of the hazard, the technology that has been

developed to address the hazard and the development of similar facilities in other countries.

Area 3: Interim Storage as Part of a Waste Management System:

In General and Questions 2,3 and 4:

Question 2: What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

Question 3: To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

Question 4: What other issues should the Department consider in developing a waste management system?

The economic development potential for a host community only grows as consideration is given to either the co-location of multiple facilities within the management system or other types of energy, manufacturing or R&D infrastructure.

As we have suggested earlier, any linkage between a CIS facility and the establishment of a permanent repository should be a matter left for negotiation between federal, State, Tribal and local governments. The flexibility afforded the development of a comprehensive SNF/HLW system by the development of CIS capacity was recognized by the Blue Ribbon Commission.

As we noted in our introductory comments, the Department (and the Congress) need to give serious attention to the governance and budgetary issues raised by the Blue Ribbon Commission in its final report. Recognition needs to be given to the fact that the responsibility for implementation of a multi-generational program might not be best served in an institution subject to leadership change on a continuing basis with funding subject to the decisions of a separate institution also subject to continuing change. These strike us as core issues in need of resolution.

From: Russell Novkov
Sent: Friday, February 25, 2022 5:56 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Russell Novkov

[REDACTED]

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From: Allison Ostrer

Sent: Saturday, February 5, 2022 11:35 AM

To: Consent Based Siting

Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage.

I oppose any expansion of nuclear energy for many reasons. Here are a few:

(1.) The most serious and inevitable risk if the U.S. Department of Energy were to take ownership of commercial highly radioactive nuclear waste before a permanent geologic repository opens: federal Consolidated Interim Storage Facilities would likely become Consolidated Permanent Surface Storage, that is, de facto Above-Ground Permanent Disposal, or Parking Lot Dumps.

(2.) Indefinitely long, to permanent, surface storage at federal CISFs would require active features. Loss of institutional control anytime over the next million years would mean the potential for catastrophic releases of hazardous radioactivity into the environment, which would harm people and other living things downwind, downstream, up the food chain, and down the generations, potentially out to great distances, depending on wind and water driven flow over long periods of time.

(3.) Indefinitely long, to permanent, surface storage at federal CISFs would remain dangerously accessible, risking unintentional/accidental, but nonetheless catastrophic, releases of hazardous ionizing radioactivity, as due to container degradation/failure over time, extreme weather disasters due to climate chaos, etc. However, intentional releases, as due to an act of war, terrorist attack, or sabotage, are also possible. So too is theft/diversion of weapons-usable materials, risking proliferation of nuclear weaponry or radiological dirty bombs.

(4.) Indefinitely long, to permanent, surface storage at federal CISFs would achieve only very short-term effectiveness, at best, compared to the hazardous persistence of irradiated nuclear fuel and highly radioactive waste.

(5.) Indefinitely long, to permanent, surface storage at federal CISFs, would result in intergenerational inequity, a form of environmental injustice.

(6.) Any legal authority for DOE to take title to and liability for commercial irradiated nuclear fuel at a federal CISF, in the absence of a permanent geologic repository, was very limited as to the quantity that could be stored there (1,900 metric tons), was for emergency purposes only, and expired more than three decades ago, in 1990.

(7.) Federal CISFs would multiply the highly radioactive waste transportation risks, while accomplishing no increase whatsoever in the safety, security, health, or environmental protection associated with the storage of irradiated nuclear fuel.

(8.) Nuclear power should be phased out and abolished, so that no more highly radioactive waste will be generated. We need to stop making it in the first place. However, for highly radioactive irradiated nuclear fuel (INF) that already exists, hardened on-site storage (HOSS), or hardened near-site storage, is the best interim measure, not CISFs. HOSS, or hardened near-site storage, is the preferred interim alternative, not CISFs.

(9.) The continued targeting of CISFs at BIPOC (Black, Indigenous, People of Color) and/or low-income communities, already disproportionately burdened by pollution and hazardous facilities, is a violation of environmental justice principles. DOE, which itself has an infamous history of targeting Native American reservations for CISFs (previously called by other names, such as Monitored Retrievable Storage (MRS) sites, Independent Spent Fuel Storage Installations (ISFSIs), Away From Reactor (AFR) sites, etc.), must cease and desist from such environmentally/radioactively racist practices.

(10.) Federal CISFs would be a dangerous dead-end detour on the road to a scientifically/technically, and socially acceptable, repository. Federal CISFs would also constitute a radical reversal of long established U.S. policy, law, regulation, and court precedent, which has held the private owners of commercial irradiated nuclear fuel responsible for its interim storage, while the federal government (that is DOE, using both nuclear ratepayer and federal taxpayer funds) is responsible for permanent disposal.

Sincerely,

Allison Ostrer

[REDACTED]
[REDACTED]



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From: Katherine O'Sullivan
Sent: Thursday, January 27, 2022 12:59 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage


Katherine O'Sullivan

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

Social equity and environmental justice should be a top priority for “consent-based siting” of federal, so-called “consolidated interim storage facilities” (CISFs). It is Orwellian to float the offer of jobs, infrastructure development, and potential funding to BIPOC (Black, Indigenous, People of Color) communities, low-income communities, and such communities already disproportionately impacted by hazardous facilities, and portray it as a social equity and environmental justice advancement. BIPOC, low-income, and already heavily polluted communities should not be further disproportionately impacted with CISFs for one of the most hazardous substances ever generated by human society, highly radioactive irradiated nuclear fuel.

*As Keith Lewis, environmental director for the Serpent River (Ojibwe) First Nation near Elliot Lake, Ontario, Canada, is quoted as saying in *This Is My Homeland: Stories of the Effects of Nuclear Industries by People of the Serpent River First Nation and the North Shore of Lake Huron* (edited by Keith Lewis, Lorraine Rekmans, and Anabel Dwyer; published by Serpent River First Nation, 1998 & 2003) — “There is nothing moral about bribing a starving man with money.” He was speaking about the devastation done to his First Nation, and its homeland, by the offer of hazardous uranium mining and milling jobs beginning in 1948, and ending altogether by 1996. The jobs are long since gone, but the devastation goes on.*

DOE itself has a most shameful tradition of targeting Native American reservations for CISFs. See the 2005 NIRS/Public Citizen factsheet, “Radioactive Racism.” This shameful history cannot be repeated now or in the future. There is also a pattern of federal CISF schemes turning into private CISF schemes, such as the Private Fuel Storage, LLC CISF, targeted at the Skull Valley Goshutes Indian Reservation in Utah. Currently, private CISFs targeting New Mexico and Texas could effectively become federalized, if DOE pays all costs, including a hefty profit margin to the private owners. However, such an arrangement is illegal. The Nuclear Waste Policy Act of 1982, as Amended, prohibits DOE from taking title to/ownership of commercial irradiated nuclear fuel at a private CISF, unless and until a permanent repository is licensed and operating.

Significantly, New Mexico is a majority minority (Latinx, Indigenous) state, with widespread poverty issues. It is also disproportionately impacted by nuclear and fossil fuel industrial pollution, and other hazardous industries. Such disproportionate impacts are especially acute at the Holtec, NM and Interim Storage Partners,

TX CISO sites (the latter just 0.37 miles from the NM state line, and upstream). These disproportionate impacts are compounded by the two CISOs, proposed to “temporarily store” a grand total of 173,600 metric tons of commercial irradiated nuclear fuel and highly radioactive waste (almost twice the amount that currently exists in the U.S.), being located just 40-some miles apart. These proposed CISOs are an attempt to turn the TX/NM borderlands into a high-level radioactive dump sacrifice area.

*See Beyond Nuclear’s series of eight fact sheets, expressing opposition to the TX and NM CISO schemes, including to DOE’s illegal potential key involvement in them: < [http:// archive.beyondnuclear.org/centralized-storage/2021/9/11/new-beyond-nuclear-fact-sheets-
opposing-consolidated-interim.html](http://archive.beyondnuclear.org/centralized-storage/2021/9/11/new-beyond-nuclear-fact-sheets-opposing-consolidated-interim.html) >*

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Tribal, State, and Local governments should have free, and fully-informed, consent-based siting rights, including an absolute veto against a federal CISO. That is, Tribal, State, and Local governments should have fully-informed, absolute, binding, and final rights to non-consent. Any DOE, or private, scheme to construct and operate a CISO must cease and desist immediately, once Tribal, State, and/or Local government “hosts” express their non-consent. In addition, consent-based siting rights should extend directly to the citizens/residents of the tribal reservation, state, and/or locality. Free, and fully-informed, consent-based siting rights should extend to citizens/residents, who should also have absolute and final veto rights to block CISOs.

For example, the Saugeen Ojibwe Nation in Ontario, by an 86% to 14% tribal referendum vote in January 2020, blocked the construction and operation of a permanent repository for all of Ontario’s so-called “low-,” and highly radioactive intermediate-, level radioactive wastes.

Free, and fully-informed, consent rights to consent, or not consent, should be extended as widely as possible, including to the public, not just to elected or appointed government leaders. And such free, fully-informed consent, with absolute and final state veto power, should also extend to permanent repositories, not just CISOs, as the Nevada U.S. congressional delegation has asserted for the past several years, with its re-introduction each congressional session of the Nuclear Waste Informed Consent Act.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

As mentioned above, the idea that jobs, infrastructure development, and/or potential funding, associated with the construction and operation of a CISO, is not compatible with environmental justice and social equity, when the CISO is targeted at BIPOC and/or low-income communities, already heavily polluted by nuclear and/or other hazardous industries. Thus, DOE should cease and desist from targeting BIPOC, low-income, and/or already heavily polluted communities for CISOs. Instead, the benefits and opportunities that DOE should be extending to Local, State, and/ or Tribal governments, in line with environmental justice and social equity, should be renewable energy and energy efficiency in nature. DOE should shift resources from the dead end that is promotion of the nuclear power industry and its dirty, dangerous, and expensive agenda, and instead promote renewables, such as wind and solar power, as well as energy efficiency.

In 2012, at a hearing of the U.S. Senate Energy and Natural Resources Committee, focused on legislation to implement the Blue Ribbon Commission on America's Nuclear Future's (BRC) recently released Final Report (published in Jan. 2012), U.S. Senator Risch (R-ID) made a cynical joke. He said that "consent-based siting," recommended by the BRC, really meant financial incentives. Sen. Risch's cynical remark was very telling and revealing. And objectionable. DOE's "consent-based siting" cannot be a thinly veiled Public Relations ploy to "get to yes" on CISFs. Legalized bribery is unacceptable, and in this case an EJ violation. As Keith Lewis of Serpent River First Nation was quoted above, "There is nothing moral about bribing a starving man with money." It would fly in the face of the Biden administration's own rhetoric about prioritization of EJ principles, rhetoric that Energy Secretary Granholm and Principal Deputy Assistant Secretary Huff have themselves invoked.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

As DOE Office of Nuclear Energy's own Blue Ribbon Commission on America's Nuclear Future (BRC) recommended in its Final Report in January 2012, DOE should no longer be in charge of irradiated nuclear fuel and highly radioactive waste management. A major reason for the public's irreparable loss of trust in DOE is its incompetence, or worse, at managing irradiated nuclear fuel and highly radioactive waste over decades past. Hence DOE must be replaced. This recommendation was as much of an overarching priority as the need for "consent-based siting" itself. This of course represents a major barrier and impediment to DOE's attempt to site federal

CISFs, even supposedly using a "consent-based" process. DOE should not be advancing this Request for Information and public comment proceeding. Any such initiatives should be left to the replacement agency, organization, or body, advocated by BRC a decade ago. Why is DOE driving this train, when its very own BRC strongly recommended DOE be replaced?

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

As an important part of fully-informed consent-based siting of CISFs, DOE should clearly admit to potential host communities that so-called "interim storage" facilities could easily become de facto permanent surface storage, de facto permanent surface disposal, or parking lot dumps. Given that highly radioactive wastes, such as irradiated nuclear fuel, remain hazardous for at least a million years (as acknowledged by the U.S. Environmental Protection Agency, in its court-ordered rewrite of its Yucca Mountain regulations, published in 2008), containers and facilities will degrade and fail, unless regularly replaced. The U.S. Nuclear Regulatory Commission assumed, in its 2014 Generic Environmental Impact Statement on Continued Storage of Spent Nuclear Fuel (previously called the Nuclear Waste Confidence Rule), that CISFs, once constructed and operating, would be replaced in their entirety, once every hundred years. So communities targeted by DOE for federal CISFs must be fully informed that the high risks of highly radioactive wastes will persist for at least a million years, and that unless the CISFs are replaced once per century in their entirety, those radioactive hazards would be unleashed into the local environment, to blow with the wind, flow with the water, and cause harm, downwind, downstream, up the food chain, and down countless generations into the future.

In a previous DOE RFI regarding CISFs, none other than Holtec International itself advised DOE that "interim" has to be assumed to last at least 300 years. Per the NRC immediately above, that would mean at

least three complete replacements of the entire CISF, to stave off age- related degradation container failure. Where would the funding come from to do so? Neither NRC nor DOE have answered that question. What would the consequences be if such replacements did not take place, such as due to lack of funding, or loss of institutional control? NRC Chairman Macfarlane penned a warning, when NRC approved its Continued Storage of Spent Nuclear Fuel GEIS (formerly called Nuclear Waste Confidence Rule, but more truthfully dubbed a Nuke Waste Con Game), that institutional control will, by definition, someday be lost. Once that happens, what will be the consequences at CISFs?

These questions and concerns, and many others regarding the high risks of CISFs, must be communicated clearly to potential “host” communities, so they know what they are getting into. If this does not happen, fully-informed consent would be violated.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

As provided for in the Nuclear Waste Policy Act of 1982, as Amended, regarding permanent repositories, the DOE should also provide funding to states, Native American tribal governments, and Affected Units of Local Government, being targeted for federal CISFs. Such

funding is essential for attaining fully-informed consent, including for the hiring of independent experts, and the performance of independent technical, sociological, and other research.

In addition, such funding support from DOE should be extended to Non-Governmental Organizations (NGOs), which are almost always expected to take part in U.S. federal licensing and/or public comment proceedings, such as this one, with no federal funding support whatsoever. This practice is itself a violation of environmental justice and social equity, as environmental and environmental justice organizations, which often operate on very low budgets, or with no funding at all, have been expected to self-fund, or else simply volunteer with no funding support, throughout highly complex and very lengthy federal proceedings. Such past abuse cannot be repeated in the present or future, not without violating fully-informed and free consent-based siting principles.

7. What other issues, including those raised in the *Draft Consent-Based Siting Process* ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)) [sic, please note that this is a broken link, despite its inclusion in the Federal Register Notice] should the Department consider in implementing a consent- based siting process?

Opponents to federal and/or private CISFs have likely submitted more than 100,000 public

comments opposed to CISFs over past years and decades. This has included public comments submitted to: NRC in the Private Fuel Storage, LLC ([targeted at the Skull Valley Goshutes Indian Reservation in Utah](#)) CISF environmental review public comment proceedings, in the late 1990s/early 2000s); the DOE Office of Nuclear Energy’s own Blue Ribbon Commission on America’s Nuclear Future (2010-2012); the U.S. Senate Energy and Natural Resources Committee chairman Ron Wyden (Democrat-Oregon) a decade ago, when the ENR Committee requested public comment during the development of legislation to implement the BRC’s recommendations; DOE’s own previous “Consent-Based Siting” public comment proceeding (2015-2017); and the current round of CISF targeting (Interim Storage Partners in Texas, Holtec in New Mexico) NRC environmental review public comment proceedings (2017-2021); and other related public comment proceedings. DOE should compile, publish, review, consider, and respond in writing, to all these previous 100,000+ public comments, opposed to CISFs, whether privately owned, or federally implemented.

As those 100,000+ comments have made clear not for years, but for decades, large numbers of Americans rightfully regard CISFs as a non-sensical non-starter. Highly radioactive wastes and irradiated nuclear fuel should only be shipped once, from the nuclear power plant sites and DOE facilities where they are currently stored, to a technically suitable, socially acceptable permanent geologic repository. (See Beyond Nuclear's "Stringent Criteria for a Highly Radioactive Waste Geologic Repository.") CISFs, by definition, guarantee that serious transport risks will be multiplied, for no good reason whatsoever, as irradiated nuclear fuel and highly radioactive waste crosses the country from reactor sites and DOE facilities, to CISFs, only to have to be shipped again someday (or some decade, or century) to a permanent repository. The permanent repository could be located right back in the same direction from which the irradiated nuclear

fuel came in the first place, further revealing the absolute folly of CISFs. If CISFs are merely intended to expedite the transfer of title and liability for commercial irradiated nuclear fuel, from industry onto DOE (that is, federal taxpayers), this is entirely unacceptable. As federal policy, law, and regulation have long established, and as courts have ruled, interim storage is the private owners' responsibility, while permanent disposal is the federal government's (that is, DOE's or its replacement entity, per the BRC recommendation — that is, federal taxpayers') responsibility. This latter policy already represents an unprecedented, unique in all of industry, very large-scale subsidy to a private industry. The nuclear power industry should not be allowed to foist interim storage costs, risks, and liability onto DOE (that is, taxpayers) as well. This would be a radical departure from past federal policy, law, regulation, and court ruling precedent.

Besides, DOE, as well as NRC, the nuclear power industry, and its proponents, stubbornly refuse to acknowledge much or any risk associated with on-site storage of irradiated nuclear fuel and highly radioactive waste, whether stored in wet indoor pools, or outdoor dry cask storage, whether at operating nuclear power plants, permanently closed atomic reactors, DOE complex sites, or elsewhere. If such on-site storage is so safe and secure, as DOE, NRC, and the nuclear power industry assert, then why ship the wastes to CISFs? Why take the unnecessary transport risks? Why expose virgin away-from-reactor sites to the very high risks of CISFs, if current on-site storage is so safe and secure? DOE, NRC, and the nuclear power industry are speaking out both sides of their mouth, in their advocacy for unneeded, unhelpful CISFs. CISFs actually multiply the risks, unnecessarily, unhelpfully, and should be rejected.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process

and how could those barriers be mitigated or removed?

As mentioned above, BIPOC and/or low-income communities, as well as those already disproportionately polluted, should not even be targeted for CISFs in the first place. It would be an environmental justice violation, on its face. But DOE could and should support BIPOC and/or low-income communities, especially those already shouldering disproportionately high hazardous industry burdens, in consent-based siting of safe, clean, renewable energy and energy efficiency economic development. This would comport with the Biden administration's stated EJ principles.

Importantly, Latinx communities often have a large percentage of residents for whom Spanish is their primary or only language. Such is the case in the region surrounding the privately owned CISFs targeting the Permian

Basin in New Mexico and Texas currently. Along one stretch of railway (El Paso to Monahans in West Texas) that would carry high-level radioactive wastes to one or both of these CISFs if they are constructed and operated, the Latinx population represents 92% of the overall population, and 49% of the population does not speak English well. (For more detailed information, see: < <http://static1.1.sqspcdn.com/static/f/356082/28466350/1631389405890/CISF+Dangers+and+Holtec+and+ISP+sites-3.pdf?token=TdODAT3hqzGDDH887ttAaoVjjJQ%3D> >)

Thus, for DOE to meaningfully communicate with such populations, all written and verbal communications must not only appear in English, but also Spanish.

Similarly, numerous Indigenous Nations have been and still are targeted for CISFs, whether privately-owned or federal. Again, all communications must be translated into all local Indigenous languages. This is especially important given the leadership role of elders in traditional Indigenous Nations; many elders speak their Native language, with English (and/or Spanish) a distant second, if at all.

Along similar lines, DOE must always be conscious of digital divides. Given the disproportionately high poverty rates, rural locales, and other socio-economic challenges faced by many BIPOC and low-income communities, including those already beset by disproportionate hazardous pollution burdens, many citizens and residents that would be most impacted by CISFs, do not have ready internet, nor cell phone, access. Despite this, especially in this era of pandemic, most to all federal government proceedings (including this one, DOE's RFI re: CIS "Consent-Based Siting," is mostly to entirely internet-based). New Mexico, currently targeted by a private CISF (Holtec), with very likely DOE involvement (albeit illegal), and previously targeted by DOE for a federal CISF (at the Mescalero Apache Reservation, which was then later targeted by a private CISF, Private Fuel Storage, LLC), is a case in point. The majority minority (Latinx, Indigenous) State of New Mexico faces many socio-economic challenges, in addition to its disproportionate nuclear, fossil fuel, and other hazardous industry pollution levels. Among these is the current lack of access, by many New Mexico citizens and residents, to the internet, and reliable telephonic connections. Thus, if DOE proposes to undertake consent-based siting interactions in such places, the agency must be prepared to rectify such digital divides. If not, any claim of "consent-based siting" rings hollow and empty, a merely meaningless check the box PR exercise.

Last but not least, the hearing and visually impaired, or person with other physical challenges, must have full access to all communications, just like everyone else in society. Not only does the Americans with Disabilities Act require this by law of federal agencies like DOE, but it is the right thing to do. Numerous persons with hearing impairments spoke out at an NRC DEIS public comment meeting re: CISF applications in the recent past, objecting to the illegal, high hurdles they faced in simply taking part.

2. What resources might be needed to ensure potentially interested communities have

adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

In addition to our answer to the question immediately above, as we also mentioned further above, DOE must provide adequate funding for community involvement, especially in BIPOC and/or low-income communities, particularly those already heavily burdened by hazardous industry and pollution. Such funding is needed for these communities to educate themselves, as well as to hire experts, communicate with their neighbors, and otherwise meaningfully take part in a very high stakes (life and death stakes, forevermore) proceeding initiated by a federal executive agency with a budget in the tens of billions of dollars per year (provided by taxpaying Americans, by the way, including hardworking ones in these very same targeted communities),

initiated — truth be told — on behalf of the nuclear power industry, itself a trillion dollar, extraordinarily heavily publicly subsidized special interest in this country.

Such funding support should be extended by DOE to NGOs, including environmental and environmental justice and social equity NGOs, to enable them to also meaningfully participate in the proceedings. After all, DOE's counterpart agencies, as in Canada and Scandinavia, do this. But in the U.S., low income, to no budget, grassroots environmental, EJ, and social justice organizations are expected to pay all the freight for their own involvement in such proceedings, or to simply take part in an entirely unfunded, completely volunteer way. This is not right nor just, and certainly violates any fair concept of "consent-based siting," at least in regards to the "host" community's civic sector/civil society, a vital element of the American experience, from the very beginning of our great experiment with democracy.

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

Renewable energy and energy efficiency are the future, if we are to have a future, in our climate- constrained world. Nuclear power is way too slow, and way too expensive, to help address the climate crisis in any meaningful way. In fact, money wasted on glacially slow and astronomically expensive nuclear power, is an opportunity cost, robbing resources from the real solutions, including renewables and energy efficiency.

So, to maximize opportunities for mutual learning, and to collaborate with communities interested in economic development, job creation, infrastructure improvement, and potential funding from DOE, renewables and efficiency should be the focus, not nuclear power, including its hideous "back end," radioactive waste storage and "disposal" (a misnomer on a small, living planet — how can we "dispose" of this forever hazard, that can all too easily escape into the biosphere over time, as its containment fails?).

*That said, even though nuclear power cannot help solve the climate crisis, it does have "insurmountable risks" all its own, as conveyed by the title and content of the groundbreaking 2006 book by Dr. Brice Smith of the Institute for Energy and Environmental Research, *Insurmountable Risks: The Dangers of Using Nuclear Power to Combat Global Climate Change* (see: <https://ieer.org/resource/books/insurmountable-risks-dangers-nuclear/>). One of these is the dilemma of highly radioactive waste management. Of course we should stop making it. But for what already exists, environmental justice principles preclude the targeting of BIPOC and/or low-income communities for CISFs, especially those already disproportionately burdened by hazardous pollution. Yet this is precisely what DOE is attempting to do, while calling it "consent-based siting" as well as an "environmental justice" initiative. Orwell is rolling so fast in his grave, he could be connected to a turbo-generator and connected to the electric grid!*

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

As with the Nevada congressional delegation's Nuclear Waste Informed Consent Act bill, introduced into both houses at the beginning of each new session of congress, any state targeted

for a permanent repository should of course have absolute and final veto rights against the scheme — that is, the power of binding non-consent.

No state should have highly radioactive waste shoved down its throat, against its will. As the DOE's own BRC itself pointed out, such attempts to "Screw Nevada" at Yucca Mountain, or to screw any other states in a similar way, will almost certainly end in failure, with no repository whatsoever at the end of bitter fight.

But of course, state veto rights should also extend to CISFs. Such rights should also be extended to Native American Tribal, and Local, governments, targeted with highly hazardous facilities such as permanent repositories and/or CISFs.

So, to engage with State, Local, and/or Tribal governments, DOE should guarantee such governments the absolute and final right to veto, or to express their non-consent, against such facilities, from the start.

But as mentioned above, DOE should not be initiating such site searches, even if "consent- based." After all, the DOE Office of Nuclear Energy's very own Blue Ribbon Commission on America's Nuclear Future recommended, in its Final Report in Jan. 2012, that DOE be replaced in the realm of highly radioactive waste management. Reasons included a complete and irreparable breach of trust by DOE, in terms of its incompetence and worse, vis-a-vis highly radioactive waste management, storage, and "disposal."

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

DOE should disclose to communities, governments, and/or other stakeholders the truth about the potentially catastrophic consequences of "hosting" forever hazardous high-level radioactive wastes and irradiated nuclear fuel, even for so-called "interim storage." DOE should make clear that "interim" storage would very likely become de facto permanent surface disposal, if a CISF is opened in the absence of a licensed, constructed, and operating permanent geologic repository, which is the exact situation in which we find ourselves.

DOE should disclose the truth about the hazards to human health of exposure to even short-term low doses of ionizing radioactivity, let alone long-term low doses of ionizing radioactivity, even under "routine" or "incident-free" operations of a CISF.

But of course, large-scale exposure to high doses of ionizing radioactivity — as due to accidents, attacks, natural or climate chaos caused, extreme weather disasters, and/or simply age-related degradation and failure of containment at CISFs over long enough periods of time — would be even more catastrophic.

DOE should disclose the high risks of reprocessing, since CISFs and reprocessing facilities are often joined at the hip, revolving door style. The private CISF targeted at southeastern New Mexico by Holtec actually grew out of a DOE scheme, the Global Nuclear Energy Partnership (GNEP), which spawned the Eddy-Lea [Counties] Energy Alliance, a pro-nuclear booster group, itself closely affiliated with the Waste Isolation Pilot Plant (which itself experienced an

"impossible" leak of plutonium and other transuranic radioactive isotopes into the environment on Valentine's Day 2014, exposing nearly two-dozen workers to ultra-hazardous alpha inhalation doses), itself also a DOE project.

Reprocessing's many risks include nuclear weapons proliferation, large-scale releases of hazardous ionizing radioactivity to air, soil, and surface water (and thus harm downwind, downstream, up the food chain, and down the generations), as well as astronomical expense, which the public will be forced to pay.

DOE should disclose the radioactive stigma impact on all other economic sectors, in communities and even states and even regions that become radioactive waste dumps.

DOE should disclose that most higher paying jobs associated with CISFs will go to specially trained individuals coming from afar, not locally, while most of the very small number of jobs that are created, and accessible by most local residents, will not be very high paying at all.

Such negative impacts, and many others, associated with CISFs should be fully disclosed by DOE to potential "host" communities and states or Native American Tribal Governments, or else any notion of "consent-based siting" will be undermined, as the "consent" will not be fully informed.

And again, low-income and/or BIPOC communities should not be targeted, lest "consent" not be freely given, but rather an expression of economic desperation, or other form of exploitation by a powerful federal agency, namely DOE, and the nuclear power industry it serves.

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

BIPOC and/or low-income communities should never again be targeted for CISFs. DOE's own environmental injustice in this regard in the past — targeting Native American reservations for CISFs, as well as targeting Western Shoshone land in Nevada for a permanent repository — is infamous and shameful. It should not be repeated in the present nor future (see: <http://archives.nirs.us/radwaste/scullvalley/historynativecommunitiesnuclearwaste06142005.pdf>; also see, regarding a DOE CISF scheme that turned into a private CISF scheme, targeting the Skull Valley Goshutes Indian Reservation in Utah: <http://archives.nirs.us/radwaste/scullvalley/skullvalley.htm>).

For Women's History Month in March, 2009, President Barack Obama honored Grace Thorpe (10 December 1921 – 1 April 2008), a Sauk and Fox and Pokagon Potawatomi Indian anti- nuclear activist, for her successful work to protect her own, and other, Native American reservations targeted for highly radioactive irradiated nuclear fuel de facto permanent surface storage parking lot dumps.

Obama's proclamation began:

"With passion and courage, women have taught us that when we band together to advocate for our highest ideals, we can advance our common well-being and strengthen the fabric of our Nation. Each year during Women's History Month, we remember and celebrate women from all walks of life who have shaped this great Nation. This year, in accordance with the theme "Women Taking the Lead to Save our Planet," we pay

particular tribute to the efforts of women in preserving and protecting the environment for present and future generations..."

It continued:

"...Women have also taken the lead throughout our history in preserving our natural environment."

Re: Grace Thorpe, President Obama proclaimed:

"Grace Thorpe, another leading environmental advocate, also connected environmental protection with human well-being by emphasizing the vulnerability of certain populations to environmental hazards. In 1992, she launched a successful campaign to organize Native Americans to oppose the storage of nuclear waste on their reservations, which she said contradicted Native American principles of stewardship of the earth. She also proposed that America invest in alternative energy sources, such as hydroelectricity, solar power, and wind power."

Thorpe served as a board of directors members of NIRS (Nuclear Information and Resource Service). Her primary organizational affiliation was NECONA (National Environmental Coalition of Native Americans).

She once told Beyond Nuclear's Kevin Kamps, in summer 2002, that her motivation to fight nuclear power and radioactive waste came from her experiences in Nagasaki, Japan in the immediate aftermath of the atomic bombing there. Thorpe won a Bronze Star for her service in the Women's Army Auxiliary Corps (WAACs, pronounced "wax") in World War II.

After President Obama's remarkable proclamation honoring Grace Thorpe's successful life's work fending off CISFs targeted at Native American reservations, how can the Biden administration DOE now be targeting Native American reservations, and other BIPOC, and/or low-income communities, especially those already suffering a disproportionate burden of pollution and hazard, with yet another round of proposed CISF schemes, albeit now under the ruse of "consent-based siting"? It is an EJ violation in and of itself.

Such repeated targeting of BIPOC and/or low-income communities, for ever more pollution and hazard, over and over again over decades, is terrorizing and wearying to the communities which must repeatedly muster the wherewithal to fend off such threats, while facing many other challenges, and while living their lives, caring for their families and communities, and striving to preserve their cultural life-ways. In this very real sense, DOE's current "consent-based siting" RFI promoting CISFs is a significant EJ violation, in and of itself.^[1]_{SEP}

2. What are possible benefits or drawbacks to co-locating multiple facilities within the

waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

As mentioned above, the private CISF scheme proposed by Holtec in southeastern New Mexico grew out of DOE's very own GNEP scheme, a pro-reprocessing and pro-"advanced" reactor RD&D (Research, Development, and Deployment) scheme, that thankfully died a sudden death with the end of the Bush/Cheney administration. But truth be told, Holtec would like to undertake reprocessing at its CISF someday, if it could get away with it — as leaders of ELEA have revealed, as in media interviews, over the years. Holtec might even float the trial balloon of deploying Small Modular Nuclear Reactors at the CISF site. After all, it has a SMNR design/fabrication/sales division. Holtec pulled the bait and switch of acquiring the permanently shutdown Oyster Creek nuclear power plant, supposedly for decommissioning and irradiated nuclear fuel management purposes. But after a short time, Holtec then proposed to build a SMNR at Oyster Creek. Holtec cannot be

trusted not to do so at other supposed decommissioning sites (Indian Point, NY; Palisades/Big Rock Point, MI; Pilgrim, MA), as well as at its CISF in NM.

But truth be told, Interim Storage Partners in Andrews County, TX, 0.37 miles upstream from the NM border, would also like to reprocess irradiated nuclear fuel at its CISF, someday, if it can get away with it. After all, Orano (formerly Areva, formerly Cogema), the French government owned nuclear giant, is a major “partner” in Interim Storage Partners. Orano/Areva/Cogema is also the lead reprocessing entity in the Western world, having contaminated the Atlantic Ocean all the way to the Canadian Arctic with radioactive wastewater pollution, as well as releasing large- scale hazardous radioactive gaseous pollution onto the winds blowing across Europe.

Although DOE is proposing a federal CISF in this RFP, the same dynamic still applies. DOE tends to try to congregate multiple nuclear facilities on the same “nuclear oasis” site, given the popular resistance to all things nuclear in most places nationwide. Wherever DOE can get an inch, it attempts to take a mile. WIPP in NM is another such example. WIPP was sold to the people of NM, against the will of many, with the false promise that if WIPP opened as a so-called “low” level radioactive waste dump (for ultra-hazardous transuranic military wastes), then NM would never be asked to become the “host” for highly radioactive wastes.

In fact, WIPP’s existence is what has led its own proponents and boosters to strive to add more and more nuclear industry in the immediate area, what rabidly pro-nuclear U.S. Senator Pete Domenici (Republican-NM) called his “nuclear corridor,” even extending into west TX.

After WIPP, URENCO set up shop in Eunice, NM, with NRC’s blessing, even though URENCO was blocked in Louisiana over EJ violations, and was run out of other states, like TN, where it attempted to set up shop. URENCO set up shop in southeastern NM despite widespread resistance in NM, and nationally.

Then Waste Control Specialists, LLC opened a national “low” level radioactive waste dump, just several miles east of Eunice, NM, just across the NM/TX state line in Andrews County.

International Isotopes, a depleted uranium hexafluoride deconversion facility, has been proposed near Hobbs, NM.

All of this is in addition to past nuclear abuses in southeastern NM, such as the Gnome-Coach Experimental (Nuclear Explosive Device) Test Site. Not to mention the nuclear abuses across NM before (and after) WIPP came in, including at Los Alamos National Lab, the Trinity atomic bomb test site, Sandia National Lab and Kirtland Air Force Base, the uranium mining region of northwestern NM and the adjacent Four Corners area, in Pueblo and Navajo/Dineì country, abuses at the White Mesa Uranium Mill in Ute Mountain Ute country in Colorado/Four Corners, etc. The radioactive racism perpetrated by the nuclear industry and DOE against the people of NM is infamous and overwhelming, as well as still ongoing.

All this to say that adding environmental injustice upon environmental injustice does not make for environmental justice. That is why DOE’s attempted assertion that the jobs, infrastructure development, and potential funding associated with “hosting” a CISF, would contribute to social equity and EJ, is Orwellian.

Proposed legislation on Capitol Hill, such as the Nuclear Waste Administration Act and other bills, purportedly intended to enact into law recommendations made by the DOE’s own BRC, has suggested that preference should be given to sites that could “host” a so-called pilot CISF, that could then “host” a full-scale CISF, that

could then “host” a permanent repository. Of course, this means that any community that makes the mistake of agreeing to “host” a pilot CISF, will then be put under extreme pressure to also agree to “host” a full-scale CISF, and then will be put under even more pressure to agree to “host” a permanent repository.

In a very real sense, this is an echo of NM’s prior experience with Los Alamos, Trinity, WIPP, etc. over the course of eight decades, and counting.

And, as mentioned above, such pressure could extend beyond “hosting” radioactive waste dumps, to such other high hazard nuclear facilities as reprocessing centers, SMNRs, etc.

This amounts to Faustian fission. Once the nuclear beast (a phrase coined by the NM-based Nuclear Issues Study Group in 2017 for its conference at UNM, “Dismantling the Nuclear Beast”) gets its claws into a “nuclear oasis,” it will never let go. It will continue to press to add more and more hazardous nuclear industry facilities, into often times BIPOC and/or low-income “host” communities, which never consented to the initial nuclear “pilot” facilities in the first place.

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

As mentioned immediately above, the nuclear beast, once its claws are in, will press for more and more. A federal CISF could well become a permanent geologic repository, whether or not the site is suitable, or socially acceptable, for either a CISF or a repository.

Alternatively, a federal CISF, just as with a private CISF, would likely become a de facto permanent surface storage site, or more accurately, a de facto permanent surface disposal site, a parking lot dump.

Another version of this involves the company Deep Isolation, Inc., pushing untested deep borehole disposal for irradiated nuclear fuel and highly radioactive wastes. Deep Isolation, Inc. is staffed by many a former DOE official, yet another example of the revolving door between federal and private, between DOE and industry. Truth be told, like a radioactive snake oil salesman, Deep Isolation, Inc. would like to sell deep borehole disposal anywhere it can get away with it, be that at CISFs, at reactor sites, or elsewhere. So yet again, once a nuclear beast is let inside the house, it won’t leave, till it wrecks the place.

Another important point here is the spirit, and in fact the letter, of the law embodied in the Nuclear Waste Policy Act of 1982, as Amended. States with relatively small populations, and thus relatively less political and economic power, made sure to include in the law a wise precaution, prohibiting DOE from taking title to commercial irradiated nuclear fuel, unless and until a permanent geologic repository was licensed, constructed, and operating.

Otherwise, the political will to ever go forward with a repository would be lost, and the CISF would become de facto permanent surface disposal, a parking lot dump.

Despite this clear prohibition in federal law, NRC has proceeded to process the Holtec and ISP private CISF license applications, which clearly indicate a major or even overriding role for DOE involvement, including paying most to all costs, including a hefty profit margin to the private company CISF owners — that is, effectively a title transfer for commercial irradiated nuclear fuel from private industry owners, to DOE (that is, taxpayers). These supposedly “private” CISF schemes, with their overriding dependence on DOE (taxpayers) to pay all the freight, significantly blurs the lines of distinction between “private” and “federal” CISFs, in violation of the Nuclear Waste Policy Act of 1982, as Amended. (See Beyond Nuclear’s series of fact sheets for 1198

more information on this: <http://archive.beyondnuclear.org/centralized-storage/2021/9/11/new-beyond-nuclear-fact-sheets-opposing-consolidated-interim.html>)

A broad coalition of environmental groups, oil/natural gas/ranching/agricultural interests, and even the States of NM and TX themselves, have filed federal appeals against both CISFs, ISP (which NRC licensed in Sept. 2021), and Holtec (which NRC will likely license later this year). Bipartisan U.S. congressional delegations in the Permian Basin have also spoken out strongly against the CISF schemes.

In addition, DOE's (using federal taxpayer money) paying most to all the freight for these supposedly "private" CISFs amounts to a radical departure from many decades of established U.S. law, regulation, and policy, as affirmed by federal court precedent — that storage of commercial irradiated nuclear fuel is the private industry's responsibility (and liability), while permanent disposal is the federal government's responsibility (and liability). In other words, title/ownership and liability cannot transfer, from private industry to DOE (American taxpayers) unless and until a permanent geologic repository has opened. CISFs, whether private or federal, or some combination of the two, proceeding in the absence of an operating repository, thus

violates the spirit and letter of the Nuclear Waste Policy Act of 1982, as Amended, to the peril of CISF "host" communities, states, Native American reservations, etc.

4. What other issues should the Department consider in developing a waste management system?

As per above, didn't the BRC in Jan. 2012 recommend DOE be replaced as the agency in charge of irradiated nuclear fuel and highly radioactive waste management?! Therefore this entire proceeding is bogus and should be terminated! The Dec. 2015-Jan. 2017 DOE "consent-based siting" public comment proceeding further breached the public's trust. Large numbers of public comments, opposed to CISFs, were largely to entirely ignored by DOE in that proceeding. DOE even scrupulously avoided the very places in the U.S. targeted for "private" CISFs, albeit with deep DOE involvement, in TX and NM. Texans and New Mexicans opposed to the CISFs had to travel to AZ to take part in DOE's closest "consent-based siting" public comment meeting! DOE remaining the agency in charge is a blatant contradiction of its own BRC's recommendations!

Thank you for your attention,

Katherine O'Sullivan

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From: Glenn Paulson
Sent: Thursday, March 3, 2022 10:19 AM
To: Consent Based Siting
Subject: [EXTERNAL] Comments on the RFI

If this has not been done already, I recommend a detailed evaluation of the process and successes/failures of the effort to site repositories for low-level radioactive wastes using multi-state compacts. There may be both positive and negative lessons to be learned from this history.

A useful book in this context is *Waste is a Terrible Thing to Mind*, by John Weingart. I believe the author is still at Rutgers University.

Glenn Paulson, Ph.D., B.C.E.S., Sc.D. (Hon.)

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From: Donald Pay
Sent: Thursday, February 24, 2022 12:59 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: Consent-Based Siting.docx

Attached please find my response to the Department of Energy's Request for Information on Consent-Based Siting and Federal Interim Storage. I appreciate the opportunity to comment.

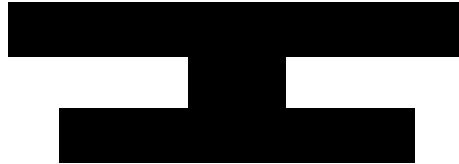
Donald Pay



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US Department of Energy
Request for Information:
Consent-Based Siting and Federal Interim Storage

Donald Pay



February 22, 2022

The following comments respond to your Request for Information: Consent-Based Siting and Federal Interim Storage. I have previously submitted comments on the Consent-Based Siting Process during the Obama Administration. I would appreciate those comments to be taken into consideration, as well as the additional comments I have submitted below.

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

DOE has no credibility with the public on matters of equity and environmental justice. The Blue Ribbon Commission suggested that a whole new structure be established for matters of storage and disposal of radioactive waste. Neither the Department of Energy nor the Nuclear Regulatory Commission should be involved in any siting process. The new structure envisioned by the Blue Ribbon Commission, and not some stop-gap, papered-over attempt at faking up “consent” by discredited bureaucracies, needs to happen first. This new approach is needed not only because DOE lacks the science and engineering expertise to build or oversee safe storage and disposal systems, but it lacks any credibility with the public for fairly treating human beings and their environment. Also, the NRC is not a credible regulatory body. It has provided licenses to private radioactive waste dumps where the communities and states have not consented.

Equity and environmental justice ought to be more than “considerations” built into a process of siting an “interim” storage facility. The Nuclear Regulatory Commission has already given approvals for private storage facilities that never went through any “consent-based siting

process.” Those approvals must be invalidated by Congress and the President before any further damage to equity and environmental justice occurs.

I’ve written extensive comments on earlier requests (during the Obama Administration) by the Department of Energy for public comment on this matter. Those comments are applicable, and I hope you can attach them here. I won’t repeat them. Still, I have no faith that any Administration can remedy the structural problems involved with environmental injustice and consent unless the DOE and NRC are taken out of this process and there is a whole new system developed, as envisioned by the Blue Ribbon Commission. A concern that has to be addressed is whether a new President could simply change regulations and policies to simply ignore environmental justice and consent. If we get Donald Trump back as President or some other equally corrupt person, will that person ignore public comment and consent requirements. This concern is not partisan. Even the Obama Administration’s DOE tried to foist a deep borehole “test” of nuclear waste disposal on unwilling communities in North and South Dakota. I have no faith that Biden wouldn’t do the same.

Environmental racism is structural, and needs to be addressed by changing the structure of how these weighty issues are handled.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Tribal, state and local governments have a role to play, but it is secondary and supportive to the role that the ordinary citizens of tribes, states and local governments should play in this process. Selecting out a few favored leaders whose governments are bribed with money is a way to make the whole idea of consent more like prostitution. Consent should be consent of the governed, and the ultimate power of consent must be in the people’s hands. To that end, the process of consent should use the initiative and referendum processes at each level of affected jurisdictions. The specific procedures for these ballot measures would have to be negotiated with the people of the tribe, state or locality. Some jurisdictions have established mechanisms for ballot measures. I would suggest multiple exit points along the entire process, which would allow consent to be given or withdrawn before beginning studies at any site, at various times as studies progress and certainly before any decision as to site suitability are made. Citizens and government entities should be involved in directing any studies that citizens might agree to and to guide any regulatory matters. To help citizens and governmental entities do this, there must be adequate funding provided, but it must be to citizens in a way that isn’t a bribe. How that is done, I do not know.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

None, other than the opportunity for the citizens to have a deciding voice in these decisions. Using certain “benefits and opportunities” to bribe local governments or local citizens is more an

offer of prostitution than it is consent. Citizens should be able to propose and collect fees of various kinds to offset their direct and indirect costs.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

If you truly believe in the consent-based process, you have to assume that citizens could reject any proposed site or studies of a site at any point along the process.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

Again, the Department of Energy has proved to be an unreliable partner to most of the current communities hosting DOE facilities. There is often the need for cleanups, which are done incompletely. Promises to clean up various sites have involved shipping wastes to other areas which have not consented. This record of irresponsibility augers against having the DOE taking a leading role in this. The Blue Ribbon Commission suggested a completely independent commission oversee siting and operation of such facilities.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

Again, I point out that DOE is not the proper agency to do any partnering in consent-based siting. The Blue Ribbon Commission suggested that an entirely new organization should be set up for siting, construction and operation.

7. What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

I submitted comments on the Draft Consent-Based Siting Process conducted in the Obama Administration. Please refer to those comments.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

The biggest barrier is trust in the Department of Energy, the US Congress and the US Presidency. Why should any citizen or local government participate in anything done in the radioactive waste area when the federal government ignores agreements, fails to carry out

promised cleanups or is decades in arrears on them? In regard to this consent-based siting process, we just saw an example of how that policy was shelved during the change in President from Obama to Trump. You can set up a consent-based siting process, and then the next president shelves it. Same with Congress. Look at what happened with the Screw Nevada Bill. There was a system that was working well and in a scientifically respected manner, and Congress decided it was time to end the science and screw a state with little power.

Again, I have to emphasize, set up an independent science-based non-political, non-nuclear industry entity to carry out all the effort, including establishing consent-based siting procedures. This entity has to have the maximum of transparency in all matters. Studies for siting must be both scientifically rigorous and conducted openly. When DOE attempted to foist a deep borehole test on unsuspecting communities in North and South Dakota, DOE secretly attempted to manipulate “consent” behind the backs of the local and state citizens and the local governments. You can’t just find a money-grubbing Governor or County Commissioner to provide consent.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

The agency tasked with this effort needs to have certain values/resources. Honesty, transparency, willingness and capability to listen, flexibility and acceptance. DOE has none of these. There must be a completely new agency conducting consent-based siting. Further consent-based siting has to be protected from interference by Congress and the President. If this can be done by contract with an automatic out or denial if there is any change not agreed to by citizens, then it has to be done.

The federal agency must provide resources to the local and state government to conduct initiatives or referenda at various points during the consent-based siting process. The agency must provide ample opportunities for citizens to say no at any stage of the process.

There are also needs of the local and state citizens who are tasked to decide on whether and how to engage with the federal agency on consent-based siting. These will have to be determined after consultation with local and state citizens. This cannot necessarily be done through state or local governments. The biggest need of these citizens will be time. They must figure out how to structure the mechanisms they want to engage with the federal agency, whether that is through an independent citizen commission or through a state and local agency or some combination thereof. I assume they will need access to funds to hire or contract for suitable staff, consultants and attorneys. I assume field and lab studies may require split sampling and independent testing.

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

These must be determined based on the needs and desires of the local population within those communities.

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

First, the concept of an “interim storage facility” needs clarification. The assumption is that such a facility is named “interim and storage” because it’s a way to initially camouflage what will become “permanent and disposal.” Anyone who has watched how DOE has missed and mishandled dates and deadlines, repurposed sites, brought in waste types it promised not to bring in at any of its cleanup or storage sites will never be under the assumption that “interim” means anything but “a hell of a lot longer than was initially stated” if not “permanent.”

Any state, local or tribal government engagement should be to provide ample opportunity for open and honest information to the people. I’m positive that such cannot be done by the DOE.

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Honest information. In the 1970s and early 1980s there was a good science-based effort to select disposal media. While the information developed was the best that science could offer at the time, it lacked much local support. Things went off the rails once the politicians and DOE decided they were going to end the science and simply shove it down someone’s throat. Now no one trusts the DOE, Congress or the Presidency on this issue.

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation’s waste management system?

DOE as an agency can’t do this. It will take a new agency to begin a slow and methodical process of rehabilitation of decades and centuries of environmental injustice. Critical first steps must be to:

Reclaim the many unreclaimed uranium mining sites

Cap the production of radioactive wastes

End subsidies for large producers of radioactive wastes and direct those to renewable energy

Current DOE and Biden Administration policies run counter to those critical first steps if they want to begin to solve the radioactive waste problem.

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

I believe states that want to continue to produce large amounts of nuclear waste through nuclear power must take responsibility to assume the risk of long-term storage and disposal of the wastes generated by these facilities. The communities that want to have nuclear power stations need to volunteer as potential sites for disposal. They need to be ready to provide, if needed, a “sacrifice area” adjacent or near to such facilities. No such nuclear power facility should be allowed to obtain a license if they have not already identified such a nearby sacrifice area.

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

The concept of “interim” storage is a dishonest marketing approach. No one with any knowledge of the history of DOE’s handling of radioactive wastes believes it. The whole concept needs to be shelved, and honesty must prevail.

4. What other issues should the Department consider in developing a waste management system?

It should consider how DOE should best hand off the responsibilities on these matters to a new entity, as envisioned by the Blue Ribbon Commission.

From: Jay Pine
Sent: Saturday, February 26, 2022 12:02 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Jay Pine

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From: Jeannie Pollak

Sent: Friday, February 4, 2022 12:21 PM

To: Consent Based Siting

Subject: [EXTERNAL] Highly radioactive waste consolidated interim storage facilities

To whom it May Concern-

Please see below my reasons for opposing proposed highly radioactive waste consolidated interim storage facilities:

- (1.) The most serious and inevitable risk if the U.S. Department of Energy were to take ownership of commercial highly radioactive nuclear waste before a permanent geologic repository opens: federal Consolidated Interim Storage Facilities would likely become Consolidated Permanent Surface Storage, that is, de facto Above-Ground Permanent Disposal, or Parking Lot Dumps.
- (2.) Indefinitely long, to permanent, surface storage at federal CISFs would require active features. Loss of institutional control anytime over the next million years would mean the potential for catastrophic releases of hazardous radioactivity into the environment, which would harm people and other living things downwind, downstream, up the food chain, and down the generations, potentially out to great distances, depending on wind and water driven flow over long periods of time.
- (3.) Indefinitely long, to permanent, surface storage at federal CISFs would remain dangerously accessible, risking unintentional/accidental, but nonetheless catastrophic, releases of hazardous ionizing radioactivity, as due to container degradation/failure over time, extreme weather disasters due to climate chaos, etc. However, intentional releases, as due to an act of war, terrorist attack, or sabotage, are also possible. So too is theft/diversion of weapons-usable materials, risking proliferation of nuclear weaponry or radiological dirty bombs.
- (4.) Indefinitely long, to permanent, surface storage at federal CISFs would achieve only very short-term effectiveness, at best, compared to the hazardous persistence of irradiated nuclear fuel and highly radioactive waste.
- (5.) Indefinitely long, to permanent, surface storage at federal CISFs, would result in intergenerational inequity, a form of environmental injustice.
- (6.) Any legal authority for DOE to take title to and liability for commercial irradiated nuclear fuel at a federal CISF, in the absence of a permanent geologic repository, was very limited as to the quantity that could be stored there (1,900 metric tons), was for emergency purposes only, and expired more than three decades ago, in 1990.
- (7.) Federal CISFs would multiply the highly radioactive waste transportation risks, while accomplishing no increase whatsoever in the safety, security, health, or environmental protection associated with the storage of irradiated nuclear fuel.
- (8.) Nuclear power should be phased out and abolished, so that no more highly radioactive waste will be generated. We need to stop making it in the first place. However, for highly radioactive irradiated nuclear fuel (INF) that already exists, hardened on-site storage (HOSS), or hardened near-site storage, is the best interim measure, not CISFs. HOSS, or hardened near-site storage, is the preferred interim alternative, not CISFs.

(9.) The continued targeting of CISFs at BIPOC (Black, Indigenous, People of Color) and/or low-income communities, already disproportionately burdened by pollution and hazardous facilities, is a violation of environmental justice principles. DOE, which itself has an infamous history of targeting Native American reservations for CISFs (previously called by other names, such as Monitored Retrievable Storage (MRS) sites, Independent Spent Fuel Storage Installations (ISFSIs), Away From Reactor (AFR) sites, etc.), must cease and desist from such environmentally/radioactively racist practices.

(10.) Federal CISFs would be a dangerous dead-end detour on the road to a scientifically/technically, and socially acceptable, repository. Federal CISFs would also constitute a radical reversal of long established U.S. policy, law, regulation, and court precedent, which has held the private owners of commercial irradiated nuclear fuel responsible for its interim storage, while the federal government (that is DOE, using both nuclear ratepayer and federal taxpayer funds) is responsible for permanent disposal.

Thank you, [REDACTED]

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From: Manuel Camargo
Sent: Friday, March 4, 2022 10:47 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage - SCE Response
Attachments: SCE Interim Siting RFI Response_Final.pdf

To Whom It May Concern,

Please find attached Southern California Edison's response to the DOE RFI on consent-based siting for federal consolidated interim storage facilities. We thank you for your work on this important initiative.

Best regards,

Manuel


Manuel C. Camargo Jr.
Principal Manager for Strategic Planning
SONGS/SCE


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Date: March 4, 2022
To: consentbasedsiting@hq.doe.gov
From: Steve Powell
Subject: **RFI: Consent-Based Siting and Federal Interim Storage**

Southern California Edison (“SCE”) is pleased to submit these comments in response to the December 1, 2021 Department of Energy (“DOE”) Request for Information (“RFI”) on how to site federal facilities for the temporary, consolidated storage of spent nuclear fuel (“SNF”) using a consent-based approach. SCE provides overall introductory comments, a summary, and responses to specific topics in Areas 1-3 in the RFI. SCE’s principal contact for these comments is as follows:

Steven D. Powell
President and Chief Executive Officer
Southern California Edison



I. Introduction and Summary

SCE is encouraged by and fully supports DOE’s efforts to develop a consent-based siting process as part of an overall strategy for a federal integrated waste management program that ultimately includes one or more geologic repositories. SNF exists today, at multiple locations throughout the country. While current storage arrangements for SNF at SCE’s San Onofre Nuclear Generating Station (“SONGS”) and other nuclear power plants in the United States can be maintained in a safe and secure configuration, now and for decades to come, these storage arrangements were never intended—by the utilities or nearby communities—for indefinite timeframes. The locations of nuclear power plants, including SONGS, were selected based on safe and efficient electricity generation. These requirements are not necessarily the same as those for interim or long-term SNF storage with respect to environmental and safety considerations. Further, with respect to fairness and consent, the local communities did not anticipate or agree that they would assume stewardship of SNF for an extended period of time—particularly long after a plant ceases commercial operation. Fairness also calls for the generation that benefitted from clean nuclear power to take responsibility for safely dispositioning the SNF, and that means addressing the matter in the near term. Nuclear utility customers already have

prepaid for the disposal of spent fuel. The country has deferred this matter long enough. Now is the time to act.

Federal interim storage is a critical component of the overall nuclear waste management program.

Interim storage is particularly important for SNF being stored at shutdown reactors, including SONGS, which cannot be fully decommissioned and the sites released for other productive uses until all the SNF is permanently removed. Interim storage also provides an opportunity to build and further demonstrate the capability to safely transport and store used nuclear fuel. It would also help build trust and confidence in key stakeholders regarding progress on the overall federal waste management strategy, including with potential host communities and affected stakeholders along the transportation routes, and communities that currently store SNF at operating reactor sites.

The development of interim storage in no way negates the need for forward progress on a permanent disposal option as required by current law.

Potential host communities and states will need confidence that storage sites will indeed be “interim,” and that a permanent storage solution will be forthcoming. Nevertheless, SCE fully supports moving forward now—in the near term—to address interim storage and, as promptly as possible, pursue permanent geologic disposal of SNF. Importantly, a near-term interim storage effort in which the federal government takes title and liability for spent nuclear fuel can begin under the existing provisions of the Nuclear Waste Policy Act (“NWPA”)¹ assuming sufficient, reliable funding is in place. Although actual construction of a federal interim storage facility would require Congressional action on a permanent repository, important and significant pre-construction progress can still be made in the near term. This could include domestic and international benchmarking of successful storage programs, organizational planning, budgeting, staffing, development of interim site criteria, public outreach, consensus building, and eventual identification of potential host sites. In summary, we agree that we need to move the consent-based process forward to get the overall storage program moving again as required by law.

SCE fully recognizes the magnitude of this effort, and that this effort must include extensive stakeholder engagement, supported by rigorous technical and engineering analyses, as well as detailed demonstrations of site suitability and safety. To be clear, there is no question that a

¹ 42 U.S.C. §10101 et seq. (1983).

successful interim storage siting process must focus on identifying an informed, willing community or communities to host the interim facility. And it must be a multi-party process that meaningfully involves potentially affected citizens and communities of interest, as well as State and Tribal governments, and a process fundamentally founded on a technically sound safety case. Not the fastest path, but consent-based siting is the most promising path toward an offsite solution.

This effort must emphasize the clear and demonstrable fact that commercial SNF has been safely transported and stored for many decades and continues to be safely stored today at multiple locations around the country. It is clear that not enough has been done to inform and educate people about the true nature of SNF storage. Nor have we explored state-of-the-art ways to show what storage facilities look like, how they are designed and maintained to ensure safety, and why we have high confidence in their current and future performance. Further, there are clearly very substantial, long-term financial and development benefits to host communities that need to be effectively communicated. All of these issues must be key areas of focus in any interim storage effort.

SCE applauds the DOE for re-starting work on the federal spent fuel management program, but as discussed in the 2012 Report to the Secretary of Energy by the Blue Ribbon Commission (“BRC Report”)² and in SCE’s 2021 Strategic Plan for the Relocation of SONGS Spent Nuclear Fuel to an Offsite Storage Facility or Repository (“SCE Strategic Plan”),³ SCE believes that ultimate success will require the program to be led by a dedicated federal entity with reliable funding that is solely focused on SNF management. Such an entity—perhaps similar to the Tennessee Valley Authority—would require Congressional action and is admittedly a longer-term pursuit. Clearing the SONGS site of SNF using consolidated interim storage was deemed by SCE’s expert advisors as taking as long as three to five decades. With such long timeframes, to succeed the federal spent fuel management program will need to remain on a reliable path across multiple Administrations and budget cycles. Continuity is vital.

SCE is offering its full support and resources in this vital endeavor. SCE believes it is uniquely positioned to support DOE’s work, whether it is as a catalyst for organizing coalitions including “Action for Spent Fuel Solutions Now” (discussed further below), by providing a platform through the SONGS

² https://www.energy.gov/sites/prod/files/2013/04/f0/brc_finalreport_jan2012.pdf

³ See <https://www.songscommunity.com/strategic-plan-for-relocating-spent-fuel/spent-nuclear-fuel-solutions-a-fresh-approach>

Community Engagement Panel (“CEP”), or by providing strategic insights from a utility perspective given our development of a multi-volume framework for the management and future removal of SNF from SONGS (including the SCE Strategic Plan). Through Action for Spent Fuel Solutions Now, SCE and the other founders of the coalition have helped bring together utilities, governments, the private sector, environmental groups, Tribal Nations and other parties—all to help develop and implement a consensus approach.

Fundamental to SCE’s support is the presumption that it is ultimately the federal government’s obligation to provide for the offsite disposition of SONGS SNF, including taking title and liability to the SNF upon DOE removal from the site. Further, SONGS customers have already paid nearly one billion dollars into the Nuclear Waste Fund (“NWF”) consistent with their financial obligations under the NWPA. These customers have held up their end of the bargain. By law, the federal government is accountable for the spent fuel program and solutions are more than 20 years overdue. Now is the time for the federal government to finally honor its legal and contractual obligations.

II. An Introduction to SONGS

SONGS is a former three-unit nuclear generating site located on the southern coast of California, near the city of San Clemente. SONGS is mostly owned by SCE, a subsidiary of Edison International. It operated between 1968 and 2012. At its peak output, SONGS supplied as much as 20% of the electricity needs of a large portion of southern California and employed as many as 2,200 people. SONGS is situated on the Pacific shoreline, and a major north-south highway runs adjacent to the plant site.

SCE began storing SNF at the SONGS site in 1970, two years after Unit 1 came on-line. Consistent with industry practice at that time, all of this fuel was originally stored in pools of water (referred to as “wet storage”). By 1980, SCE had safely shipped 270 Unit 1 SNF assemblies for offsite reprocessing and storage in Morris, Illinois.⁴ In 2003, SCE began transferring Unit 1 SNF to an independent spent fuel storage installation (“ISFSI”) (referred to as “dry storage”) using the Transnuclear Americas, LLC (“TN”) Advanced NUHOMS® dry storage system. Between 2003 and 2012, 50 TN canisters containing Unit 1, 2, and 3 SNF and one TN canister containing Unit 1 Greater-Than-Class-C (“GTCC”) waste were loaded to the SONGS ISFSI. The remaining Unit 2 and 3 SNF was transferred to the ISFSI by the summer of 2020 in

⁴ In 1977, President Carter decided to indefinitely defer the spent fuel reprocessing program in the United States, so all 270 SONGS Unit 1 SNF assemblies remain in offsite storage at Morris. SCE retains title to that fuel.

73 Holtec HI-STORM UMAX dry storage systems. The two canister-based dry storage technologies used at SONGS are dual-purpose certified by the U.S. Nuclear Regulatory Commission (“NRC”), which means that the SNF is stored in canisters designed for both onsite storage and offsite transportation by DOE without repackaging the SNF.

To ensure the long-term safety of spent fuel storage at SONGS, pending DOE removal, SCE has: (1) pioneered an industry-leading application of an in-situ, robotic-delivered metallic overlay technology for canister remediation if the need arises; (2) adopted a state-of-the-art canister inspection and maintenance program for the SONGS ISFSI nearly two decades ahead of when such a plan is required by NRC regulation; (3) added an inspection “test” canister to the Holtec system that will contain no fuel but will be electrically heated and used for long-term canister aging studies; (4) implemented an ISFSI radiation monitoring system, including sharing of collected data with the surrounding community, and; (5) worked closely with the SONGS CEP to address subjects of interest or concern to local communities. For example, special meetings of the CEP have focused on subjects such as “defense in depth” for onsite SNF storage and responses to potential events that could arise outside the “design basis threats” used to develop current storage requirements.

In 2018, SCE assembled a team of six nationally recognized experts with decades of collective experience in nuclear waste policy, regulation, and program implementation to guide the development of the SCE Strategic Plan. The SCE Strategic Plan, released in March of 2021, explores commercially reasonable approaches to relocating SNF at SONGS. A companion volume to the SCE Strategic Plan, the Conceptual Transportation Plan,⁵ focuses on the specific steps involved in planning for and executing shipments of SONGS SNF to an offsite facility, once such a facility is available. These two documents (Volumes II and III) inform the Action Plan for Relocating SONGS Spent Nuclear Fuel to an Offsite Storage Facility or Repository (Volume I). While the SCE Strategic Plan is not focused solely on federal interim storage, it does evaluate needs and recommendations to successfully implement interim storage, including lessons-learned from nuclear waste management efforts to date both domestically and internationally.

Concurrent with the release of the SCE Strategic Plan, SCE announced formation of “Action for Spent Fuel Solutions Now”—a broad-based coalition group of local governments, elected officials, utilities, environmental groups, labor leaders, Native American leaders, business organizations, and other

⁵ See <https://www.songscommunity.com/strategic-plan-for-relocating-spent-fuel/spent-nuclear-fuel-solutions-a-fresh-approach>

community members who support federal government progress on spent fuel storage.⁶ The goal of this organization is to encourage the federal government to provide off-site storage and permanent disposal solutions for SNF at SONGS and other nuclear plant sites across the nation, with input from stakeholders and engaged communities.

III. SCE Responses to Questions for Input

a. Area 1: Consent-Based Siting Process

Not surprisingly, the greatest challenge in terms of public support and stakeholder acceptance will be in host states and communities—that is building sufficient support locally and at all levels of affected government—to allow for the selection of an interim storage site. The magnitude of that challenge is evident from the history of the U.S. nuclear waste management program to date. But there are positive siting examples, both in the U.S. (*e.g.*, the Waste Isolation Pilot Plant (“WIPP”)) and in other countries where the host communities did consent, that provide valuable insights into successful and necessary attributes of such efforts. These successes, however limited, have followed years of sustained effort in trust-building engagement with stakeholders, local communities, States, and Tribes.

In terms of lessons-learned, for both in-progress and completed waste storage projects, they are well documented and too extensive to present in any detail here.⁷ But there are key commonalities worth highlighting, addressed throughout the comments below.

1. Consideration of social equity and environmental justice

We applaud the DOE staff for being sensitive to social equity and environmental justice issues as part of the interim siting effort. Ethically, engagement should ensure that those most directly impacted are involved. Depending on the interested community, this could include not only local government officials, but also a broader canvassing of potentially less-vocal stakeholders, including disadvantaged communities, EJ, faith, and non-English speaking communities. In particular, the program must pay special attention to communications to and from communities that may not have wide access to electronic forms of communications or the background on the safety and science relating to SNF storage. Communities must be informed and equipped with resources to effectively participate in

⁶ *Id.*

⁷ *See e.g.*, <https://www.nwmo.ca/>

discussions and decision making. Opportunities for genuine involvement should include face-to-face conversations where possible.

Further, an important focus of the interim storage efforts must be helping potentially interested communities understand the risks and benefits of hosting an interim facility, including being provided with the opportunity to define those benefits. And the interim storage process must be independent, objective, and not unduly influenced by industry or political considerations or one community at the expense of another. Potential host communities must feel invited to the process and able to have a meaningful impact on siting considerations, but also means to substantially prosper from being involved in the process.

The sheer number and complexity of issues and technical information, however, may be deterrents to full and active participation for some. Therefore, among the first steps should be an initiative to describe the nature of the effort, the options for responsible management of the waste, and seek broad agreement on a fair and effective path to interim storage for all potentially impacted communities. But this initial effort should also include the compelling case of what happens if there is no action to solve this problem. The waste exists now in multiple locations throughout the country where it can be stored safely for many decades, but SNF ultimately must be isolated from the environment essentially forever. It is our mutual obligation to begin to develop a solution and not pass this on to future generations.

An effective engagement program should be broad and diverse, including multiple avenues of dialogue with both interested and potentially affected communities. Opportunities to participate in these discussions should be communicated widely and regularly. Further, particular effort should be made to develop a partnership with such communities from the beginning *i.e.*, not brought in at the end of the process to comment on final options.

But certain communities may need early support to build their knowledge and capacity to be an informed participant. For example, they may require early engagement of experts to help them understand the issues, so they can ask the right questions and participate in a meaningful way. Financial support, with appropriate checks and balances, may also be necessary for meaningful early participation. Experience also indicates that tailored, user-friendly information packages distributed in manageable amounts would also help to ensure effective dialogue with diverse local communities and groups.

To the degree that some communities of interest may be disadvantaged, consider that the California Public Utilities Commission (“CPUC”) has established a Disadvantaged Communities (“DAC”) Advisory Group and associated charter that provides opportunities for representatives from disadvantaged communities to help shape energy-related programs and policies that directly affect them. While this particular effort recommends that entities for the Advisory Group be located within the vicinity of the project, and that is clearly not practical at this point, DOE could consider the California DAC Advisory Group and similar groups around the country as a constructive approach for a national version and consider national or at least regional organizations as members.

2. Roles of State, Tribal and local governments

To be successful, an interim storage program must find ways to address state concerns and the sovereignty of Tribal Nations, while at the same time relying on local support for proposed facilities. Under any realistic siting scenario, the potential host community, States, and impacted Tribes would all have to consent to be considered for interim storage, agree on the terms of the site study, and align on what is to be built—all before submission of a licensing application. Therefore, it will be essential to affirm a role for States, Tribes, and local governments that is meaningful, while recognizing that federal law assigns exclusive jurisdiction over nuclear safety and SNF storage matters to the NRC. For example, certain States have extensive experience in aspects of nuclear regulation (*e.g.*, Agreement States), and States and many Tribes have extensive experience in regulating hazardous wastes. Therefore, in developing the consent-based siting process, DOE should consider providing broader resources to affected States, Tribes, and local governments to, for example, conduct or sponsor independent technical evaluations and/or participate in the development of initial siting and operational standards.⁸ As another example, when SONGS was operating and in the interest of energy reliability, the California Energy Commission required SCE to assess certain potential environmental risks to the SONGS site. To do so, SCE retained researchers from the Scripps Institute of Oceanography at University of California San Diego and others to conduct the research. Today, that body of research helps to inform SCE’s understanding of the seismic and tsunami risks to the SONGS spent fuel storage facility. States, Tribes and local governments could also be part of an independent peer review process.

SCE has broad experience working cooperatively with States, Tribes, and local jurisdictions on major projects, including SNF storage, and could assist DOE with exploring this issue further.

⁸ Refer to New Mexico Environmental Evaluation Group (“EEG”) experiences in evaluating WIPP.

3. Benefits and opportunities to encourage local, State and Tribal engagement

As an initial matter, SCE suggests that it would be productive to include communities or areas already involved in the nuclear field, including past or present nuclear power generation, in any early discussions of interim storage. Such communities may already have the insights and experience to reasonably assess the risks and benefits of interim storage, and to assist DOE and other communities in doing the same. Of course, the government should also have the flexibility to involve or approach other communities that it believes can meet the initial siting criteria.

Keeping in mind the fundamental objective of fairness, it will undoubtedly be necessary to recognize the contributions and costs borne by any interested community through appropriate mitigation measures, including a substantial and flexible incentive program. The process to identify interested communities must include negotiation of a *broad and ongoing* set of benefits to directly affected communities, States and Tribes, as well as direct community involvement in the discussions of potential benefits. But SCE believes that potential host communities themselves will be best positioned to ultimately determine what benefits and opportunities would encourage serious interest. Benefits and opportunities of interest likely will be unique to each host community. Specifically, what will ultimately be negotiated cannot always be identified ahead of time and applied to different communities across the country. Nevertheless, any benefits or opportunities should be focused on helping the communities prosper through a long-term partnership, including support for a potential host community's vision for its social, cultural and economic future.

But apart from financial benefits, consideration should be given to other benefits such as local hiring and purchasing preferences, economic development, infrastructure investments, and opportunity to co-locate research facilities and laboratories to support local and regional economic development and employment. This could also include a commitment to train and employ members of local communities.

Given history, however, early public indications of community interest are likely to be met with significant criticism and opposition from certain affected citizens, but also outside, unaffected organizations, that could all but shut off further productive dialogue. Specifically, a program that begins with discussion of fixed incentives and a public call for interest will almost surely fail. SCE suggests instead that mayors, government and industry leaders, citizens, organizations, environmentalists, and others should be first afforded the time and space to understand the nature of the opportunity and explore the possibilities and consequences among themselves and key constituents, away from the

public and political spotlight. They also need to be able to approach responsible government officials, with zero obligations, to investigate their potential interest, benefits and opportunities.

As discussed above, some early financial support, with appropriate checks and balances, may also be beneficial for interested parties to participate early in the process. This could include financing for local governments and citizen organizations to conduct their own studies and analyses of siting issues and potential sites and facilitate conversations related to same. It could also include compensation for allowing further investigation and characterization of a proposed site.

4. *Barriers or impediments to successful siting of federal interim storage*

SCE agrees with the immediate objective of starting work on the consent-based siting process. And while not all pathways to developing an interim storage program require Congressional action, all involve federal agencies and policies that would be far likelier to succeed through a well-functioning, dedicated national-level nuclear waste management program. Experience tells us that nothing will work over the long term required for this effort if the responsible implementing organization is seen as unstable, lacking reliable funding and resources, and unable to make and keep promises over the long-term. But SCE recognizes that this will take time and require a comprehensive set of reforms to the national program.

For example, in the countries moving forward with SNF storage and/or disposal sites, their siting approaches have been implemented by an independent, dedicated, well-funded, and stable organization with broad authority and flexibility, a strong commitment to stakeholder engagement, and willingness to entertain a range of positive incentives for host communities. In contrast, federal waste management efforts in this country to date have suffered from inconsistent and often inadequate funding and ever-changing policy direction under successive Administrations and Congresses. Many experts and organizations, including those involved in the BRC Report and SCE Strategic Plan, have recommended the creation of a new, single-purpose waste management organization in the United States—potentially modeled on other federally chartered entities that have sufficient independence to sustain policy continuity over several decades and several political cycles. Together with budgetary reforms to ensure dependable access to the financial resources needed to execute a large, multi-year capital investment program (with appropriate oversight), such an organization could provide the “stability, focus and credibility” needed to successfully implement a consent-based interim storage program.

SCE recognizes, however, that creation of a dedicated entity to manage this effort is not currently in progress, and SCE does not suggest that action on interim storage should in any way be deferred pending such potential changes. But given the many years it will take to pursue interim storage using a thoughtful, consent-based process, SCE suggests that serious and prompt consideration be given to creation of a single-purpose waste management organization with reliable funding to consistently manage this effort over the long-term. As discussed below, this could also help to alleviate concerns about the duration of interim storage.

SCE also cautions against setting too high a bar for initial host community involvement that could have a chilling effect on preliminary explorations of interest. For example, preliminary commitment or consent requirements to engage in even early discussions may deter sincere and productive communications regarding this effort. Instead, early, commitment-free communications should be encouraged. Similarly, too strict initial siting criteria could prematurely exclude potentially viable interim storage locations. Instead, siting criteria should be phased and narrowed as the process proceeds. Relatedly, DOE's planned funding opportunity should be provided with no firm community obligation or commitment to site a storage facility.

5. Reasonable expectations concerning duration of interim storage

It is clear from past and present siting efforts that the realistic duration of "interim" storage is a primary concern to all affected parties *i.e.*, that interim storage will become permanent by default. Realistically, without some demonstrated progress on a federal repository—the ultimate goal—few if any communities are likely to commit to hosting an interim storage facility. SCE believes that this could primarily be addressed by measurable, visible, progress on siting a repository as required by current law.

SCE believes that concerns about interim storage becoming permanent could also be addressed, at least partially, by a phased or staged interim storage approach, with initial focus on shutdown plants that have a limited, defined quantity of SNF. For example, rather than siting and licensing a large interim facility capable of storing all existing SNF, a phased facility could have a defined, limited storage capacity. This could be readily accommodated by existing regulatory processes. NRC can include conditions in the interim storage license to limit storage capacity as requested in the license application or as imposed for other regulatory reasons. A smaller capacity interim facility would presumably impose less of a burden on local communities, including through a limited finite transportation effort.

As an initial step, SCE recommends that DOE establish a working group to develop a comprehensive legislative amendment package. National and local coalition groups, such as the Decommissioning Plant Coalition and Action for Spent Fuel Solutions Now that have demonstrated a keen interest in this important issue, could be called upon to participate in such a working group, as well as help advocate for passage. These and similar organizations are committed to safely removing SNF from reactor sites and fulfilling the federal responsibility by providing offsite interim storage and permanent disposal options.

In addition, an interim storage plan could focus on ensuring and demonstrating the ability to remove SNF from the interim facility. This could include specific design features allowing for future transportation to a permanent repository. Further, community financial incentives for interim storage could be established for a set duration, with escalation factors should storage go beyond an initially defined duration.

6. Partnering with organizations and communities

There is an inherent fear and stigma experienced by many citizens and communities associated with storage of SNF. Some are concerned about safety and environmental health, while others are concerned with ongoing nuclear operations generally. All such opinions need to be respected, but these concerns and fears are contrary to the clear and demonstrable fact that commercial SNF has been safely stored for many decades and continues to be safely stored today at multiple locations around the country, with little interest or fear from most local communities. Therefore, it is clear that not enough has been done to inform and educate people about the true nature of SNF storage and how we protect it now and going forward, as well as the very substantial, long-term financial and development benefits to host communities. Nor have we explored state-of-the-art ways to show what storage facilities look like, how they are designed and maintained to ensure safety, and why we have high confidence in their current and future performance. Accordingly, it will be vital for the government to partner with organizations and communities already involved in the safe storage of SNF to clearly communicate this message. In particular, SCE suggests involving people and organizations from communities with existing nuclear plants, and to draw upon the experiences, insights, and perspectives of the people who live and work near existing spent fuel storage facilities. Among these organizations are what the NRC refers to as community advisory boards for decommissioning nuclear plants. SCE for instance, has an independent SONGS Community Engagement Panel made up of a broad range of stakeholders from the communities surrounding San Onofre that could serve as a model for or assist in this effort.

7. Other issues

As noted above, there is helpful domestic and international precedent regarding SNF storage siting that should be considered and adapted, as appropriate, to the proposed new interim storage effort. While the lessons-learned are too numerous and detailed to discuss in any depth here, the following are a few issues that should be considered for the new interim siting process:

- Development of a clear and understandable legal framework regarding the overall interim storage effort before beginning work, including roles, responsibilities, and authorities, so as to avoid disruptive mid-project changes;
- Establishment of internal program milestones to allow for review by Congress, the Administration, and stakeholders; milestones can and should be flexible, but nevertheless should be set and tracked;
- Development of initial siting criteria to ensure that substantial efforts are not wasted by the program or potentially interested communities to investigate sites that are objectively unsuitable;
- The method or form of consent should be left up to the host communities, and not required until towards the end of the process; and,
- The consent process should be legally binding but include an opt-out option up to a certain point in the process.⁹

b. Area 2 – Removing Barriers to Meaningful Participation

The Area 2 topics generally relate to the development of an equitable, informed, and engaged process with affected stakeholders and interested communities. Rather than address each question individually, SCE provides the following general comments on methods to facilitate meaningful participation. SCE also refers to its comments in Area 1.

As discussed above, for a complicated and technically-involved issue like development of interim SNF storage, the inability of citizens and community groups to access the necessary technical expertise before making any expressions of interest (or not) can be a major barrier to substantive participation. Therefore, the program should set aside reasonable funding for participation by local citizens, groups,

⁹ See also BRC report and SCE Strategic Plan.

and organizations. The availability of funding should be widely-announced and reasonable criteria established against which to evaluate applications for financial support.

Further, lack of program stability, including everchanging management, will inevitably lead to skepticism and doubts about the focus and intentions of the program. The program, instead, needs a trusted, stable, and consistently funded organization that is ultimately in charge and not unduly influenced by industry or political considerations. The attributes of such an organization are discussed in detail in the BRC report and SCE Strategic Plan.

Also, as discussed above, meaningful and fruitful community involvement is likely to fail without at least some progress on a permanent repository. Simply put, the public will not have confidence on the interim nature of storage without some form of legal link to permanent storage.

c. Area 3 -- Interim Storage as Part of a Waste Management System

As discussed in the BRC report and SCE Strategic Plan, geologic disposal is an essential component of a comprehensive nuclear waste management system because very long-term isolation from the biosphere is the only responsible way to manage SNF. But SCE suggests that for the next several years, the focus should be on initiating the interim storage process, including preparing and presenting the supporting safety case. Consideration could be given to confidence-building transportation efforts, possibly including early transportation of GTCC.¹⁰ Once progress is being made on interim storage, SCE also suggests moving forward on appropriate institutional and governance changes to ensure the long-term success and viability of the interim storage program. This includes resolution on the path forward on a permanent geologic repository by finally deciding whether to resume the Yucca Mountain licensing process or start work toward the development of an alternate repository for the final disposal of all commercial SNF. As this is a statutorily-mandated pacing item for construction and operation of interim storage, work on the repository effort cannot be delayed indefinitely.

Further, while maintaining the legal link to permanent disposal, DOE should pursue broader authority to enable other forms of business models, including contracting for private interim storage or forming arrangements between the federal government and a non-federal public or private entity. Such flexibility would improve the chances of success, while still requiring progress on a permanent

¹⁰ See e.g., Conceptual Transportation Plan at <https://www.songscommunity.com/strategic-plan-for-relocating-spent-fuel/spent-nuclear-fuel-solutions-a-fresh-approach>.

repository. Additional business models, however, must still ensure that DOE takes title to fuel once it is moved offsite.

With regard to the possible benefits or drawbacks of co-locating interim storage with other facilities e.g., manufacturing, R&D, or clean energy, SCE suggests that such efforts may provide substantial additional benefits to a host-community in terms of employment and economic development and, therefore, should be on the menu of possible incentives. But, ultimately, such decisions should be left to the host communities that are in the best position to evaluate the benefits of such proposals.

Transportation of SNF represents a crucial link in the overall Waste Management System but planning and providing for adequate transportation capacity will take time and present logistical and technical challenges. This includes training and involvement of many different parties, and the design, procurement and testing of specialized equipment. Given the broad scope of this effort, planning for transportation should not be left to the end of the interim siting process. Admittedly, it would be premature to fully fund a transportation readiness program before knowing with some certainty the destination of the fuel, but substantial benefits can nevertheless be gained from a modest early investment in transportation. SCE suggests the initial transportation focus could be on shutdown plant sites, and SCE is willing to assist on this effort given the substantial work it has already completed in this area. SCE also suggests that transportation planning, while very important, should be managed and funded separately from interim storage, so as not to delay or detract from a focused interim storage effort.

IV. Closing

Again, SCE is encouraged by DOE's renewed efforts to develop a consent-based siting process for federal consolidated interim storage of spent fuel as part of an overall integrated waste management program that ultimately includes permanent geologic disposal. We appreciate the DOE staff's openness and engagement to date, we support your efforts, and we look forward to doing what we can to help advance a consensus-based approach that is rooted in best practices.

From: Joann R
Sent: Thursday, February 3, 2022 4:54 PM
To: Consent Based Siting
Subject: [EXTERNAL] radioactive waaste

Nuclear power should be phased out and abolished, so that no more highly radioactive waste will be generated. We need to stop making it in the first place. However for highly radioactive irradiated nuclear fuel (INF) that already exists, hardened on-site storage (HOSS), or hardened near-site storage, is the best interim measure, not CISFs. HOSS, or hardened near-site storage, is the preferred interim alternative, not CISFs.

Sincerely,

Joann Ramos

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From: Carlos Leipner
Sent: Friday, March 4, 2022 12:19 PM
To: Consent Based Siting
CC: Cohen, Armond; Ann Weeks; Lindsey Griffith; Conrad Schneider; Alan Masinter; Jeanette Pablo; Brett Rampal
Subject: [EXTERNAL] Clean Air Task Force Comments on Notice of Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Fed.Reg. 68244 (December 01, 2021), Docket ID No. DOE-HQ-2021-0032
Attachments: 20220304_DOE RFI Nuclear Waste - CATF Response.pdf

Dear Sir/Madam,

Clean Air Task Force ("CATF") appreciates the opportunity to provide our organization's views on the importance of consent-based siting for federal interim storage facilities. CATF is a global nonprofit organization working to safeguard against the worst impacts of climate change by catalyzing the rapid development and deployment of low-carbon energy and other climate-protecting technologies.

Attached, please find a PDF document which includes CATF's response to the specific questions outlined in the Notice of Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Fed.Reg. 68244 (December 01, 2021), Docket ID No. DOE-HQ-2021-0032 for your review and consideration.

CATF remains available and interested in providing further clarification on our perspectives to the U.S. Department of Energy.

Best regards,

Carlos Leipner
Director, Global Nuclear Energy Strategy

Clean Air Task Force
[REDACTED]
[REDACTED]

[CATF.US](https://www.catf.us)

[@CLEANAIRCATF](https://twitter.com/CLEANAIRCATF)

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March 4, 2022

Office of Spent Fuel and Waste Disposition
Office of Nuclear Energy
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

Submitted electronically to consentbasedsiting@hq.doe.gov

RE: Clean Air Task Force Comments on Notice of Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Fed.Reg. 68244 (December 01, 2021), Docket ID No. DOE-HQ-2021-0032.

Dear [DOE]:

Clean Air Task Force (“CATF”) appreciates the opportunity to provide our organization’s views on the importance of consent-based siting for federal interim storage facilities. CATF is a global nonprofit organization working to safeguard against the worst impacts of climate change by catalyzing the rapid development and deployment of low-carbon energy and other climate-protecting technologies. With 25 years of internationally recognized expertise on climate policy and a fierce commitment to exploring all potential solutions, CATF is a pragmatic, non-ideological, technology-inclusive advocacy group with the bold ideas needed to address climate change. CATF has offices in Boston, Washington D.C., and Brussels, with staff working virtually around the world. Our responses to the questions posed in the RFI are below.

Introduction

In addition to responses to the specific questions posed in the RFI, CATF notes that experiences in other countries suggest a community-centered, rather than process-centered, approach offers significant benefits. A successful consent-based siting program for spent nuclear fuel storage may be best achieved by empowering communities to develop and offer their own terms and conditions for siting facilities. The needs and priorities of different communities may vary significantly, so starting from community-generated terms may be more successful than a standardized process for all communities.

This suggestion is based on the experiences of Sweden and Finland, where initial, government-led efforts failed to produce consent. When communities were allowed to come forward expressing their interest in hosting storage, more favorable outcomes were possible. CATF recommends that DOE look to those examples as this process moves forward and consider asking potentially interested host communities to self-identify. Under such a community-led approach, some of the steps identified below in response to specific questions could be carried out by the communities themselves, rather than the Department.

Responses to Specific Questions in the Request for Information

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

A consent-based siting process cannot be created without recognizing the context for siting decisions on individual projects. The context for a siting decision includes existing pollution burdens in the area, the voice and agency of local communities in past decisions, the role of any economic duress in local decision making, and historic factors in local property values, e.g., redlining and past siting conflicts. *Expressly acknowledging and discussing this context with communities could help facilitate open dialogue that is responsive to and driven by the needs and priorities of communities.*

In order to understand context in particular communities, the Department should conduct an in-depth community impact study including:

- demographic information represented in the community (e.g., gender/sex, language, race, urban/rural, income, education and employment information);
- existing environmental and health trends and impacts from energy and industrial infrastructure including traffic;
- utility costs and broadband and computer accessibility;
- context specific to questions of siting interim storage such as:
 - the presence in a community of high-risk facilities such as facilities regulated under EPA's Risk Management Planning program,
 - the Department of Homeland Security's Chemical Facility Antiterrorism Standards program,
 - the Coast Guard's Maritime Transportation Security Act program,
 - proximity to existing nuclear facilities such as nuclear power plants, and
 - the location's vulnerability to extreme weather and natural disasters and the presence of existing transportation infrastructure sufficient to enable waste transit to a possible site;
- Other factors identified as relevant by the community.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Local elected officials must have a role in determining consent, but who brings minority views? In order to truly build consent in potential host communities, the Department should ensure meaningful and accessible public participation opportunities through the development, publication, and implementation of community engagement plans. Those plans should ensure:

- Timely Public Notice in plain language, translated to appropriate languages, including relevant information and materials, should be provided early in the process. The materials should be descriptive and included on a dedicated website as well as on a non-website vehicle, such as posting on local/community boards and direct mail, and ensure that timelines and deadlines allow sufficient time for communities to ensure informed participation.
- Inclusive Public Meetings should be held, including internet access, language, time of day, and availability of information in advance. In the time of COVID, the substitution of webinars for in person public meetings by federal and state governments underscores a major accessibility issue in many communities: the lack of broadband access and/or affordable access. Often community leaders and residents participate by phone and cannot view PowerPoint presentations or other materials. In addition, meetings should be held at two different times to accommodate different work schedules, such as mid afternoon and evening.
- Senior Level Representation from relevant government agencies and interim storage contractors should be present at meetings and available for contact. These representatives should have sufficient authority to represent the agencies and contractors, make commitments, and inform the highest level of leadership.
- Community Engagement Facilitator to ensure respectful, cooperative and productive meetings.
- Timely Access to Information. Presenting information for the first time at a public meeting, with the expectation that meaningful engagement will result is unreasonable, even though it is a common practice. Alternatives include providing the information in advance or holding two meetings: an initial presentation meeting and a follow up discussion meeting.
- Time and Resources should be provided to communities to respond to information requests and make decisions. Federal and state deadlines often do not consider the amount of time and resources a community needs to reach out to its residents, educate them on key issues, and respond.
- Public Responses should be provided to public comments, including those raised at public meetings. Those comments and responses should be made available by the Department in an easily accessible public record.
- Outreach must include both local communities that are considering hosting storage as well as communities along transportation routes for waste.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

The Department should work to identify and publicize potential benefits to communities, including local property tax revenues from the development of privately operated sites (or federal direct payments in lieu of property tax revenues), workforce training and employment opportunities, and community partnership opportunities. In a variety of project development contexts, the private sector has engaged in a wide range of meaningful activities to support local communities, including partnering and mentoring local high schools, providing financial and technical support to community colleges, contributing at the corporate and employee level toward a range of charitable initiatives such as food banks, and a range of volunteerism. Interim storage partnerships between developers and state, local and tribal governments could explore similar opportunities.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

There is a possibility that consent will not be achieved for any sites, or adequate interim storage sites to enable management of the full complement of spent fuel across the country. If that is the case, incentives would have to be increased or additional guarantees, such as set timeframes for removal of the waste from current storage to an interim facility, would need to be put in place. There is also the potential for delay, which leaves current host communities at risk. In that case, a key first step would be an in-depth analysis of each failed interim waste initiative to determine the true barriers, which could include inadequate community engagement to concerns that “interim” means “final” as a practical manner. In some cases, these barriers will not be overcome; in other cases, appropriate incentives and effective community engagement could make a difference.

CATF suggests that DOE consider inviting communities to self-identify as potential hosts early in the process to allow them to specify necessary incentives and safeguards based on local needs and priorities. Ultimately CATF believes this approach will be more successful and more efficient.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

In order to build trust and acceptance in local communities, the Department should not ignore the possibility that a permanent repository will continue to be unavailable for development in a reasonable time frame. This acknowledgement should be explicit, and could include contingency provisions such as additional benefits or a plan to move the waste to another interim site if a permanent repository is not available by a specific time.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

Development of a consent-based approach should be informed by input from the White House Environmental Justice Advisory Committee, and from state and local agencies including those that have engaged in similar processes. Individual community impact assessments may identify additional local organizations that should be partners in development of consent for specific sites.

7. What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

As mentioned above, experiences in Sweden and Finland suggest that a community-centered approach, rather than a process-centered approach, offers significant benefits. In both of these countries, initial government-led efforts failed to produce consent, but when communities were allowed to come forward to express their interest in hosting storage, more favorable outcomes were possible. CATF recommends that DOE look to these examples as this process moves forward.

Under such a community-led approach, potential host communities could develop their own terms and conditions for siting facilities and identify themselves to the DOE. The needs and priorities of different

communities may vary significantly, so starting from community-generated interest and terms may be more successful than a standardized process for all communities.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

The barriers for participation in a consent-based siting process will be similar to the barriers for participation in most regulatory processes:

- Public Awareness of the Process: Clear public notice in forums and languages appropriate for the local community, early in the process.
- Accessibility of the Materials: Materials should be made publicly available, including in hard copy especially for those who do not have internet access. This could be accomplished by mailing postcards with web addresses and phone numbers to request hard copies, as is currently done for drinking water consumer confidence reports. Mailing postcards also offers the opportunity to reach tenants who could be impacted. Effort should also be made to ensure materials explain technical information in plain language for lay audiences.
- Accessibility of Public Meetings: The Department should ensure that any public meetings are accessible to members of the community, including by providing translation services.
- Resources to Participate: For some members of the public, it may be difficult to find the time and resources to participate in the process. This may take the form of workers being unable to participate in public meetings at set times, or being unable to submit comments in English. To remedy these issues, DOE could ensure recordings of all public meetings are available and accessible; accept comments in multiple languages; and accept comments in multiple forms, i.e. paper and electronic, without challenging cover forms. Ideally, DOE would provide technical assistance grants to local communities to hire trusted technical experts for assistance understanding and responding to technical aspects of proposals.
- Mistrust and Fear Among Some Community Members: Formal, official processes can be intimidating for members of disenfranchised and underserved community members. This could be remedied by providing an avenue for comments to be submitted anonymously.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

- Local, State, and Tribal governments and residents are likely to need support in order to engage with the Department and potential contractors. Support should include:
- Technical assistance grants to allow local communities to hire technical experts and facilitators or negotiators they trust;
- No-cost provision of materials for any community member requesting them;
- No-cost translation services for materials to be provided and comments submitted; and
- Toll-free contact numbers for representatives from government agencies and potential interim storage contractors.

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

- The Department should:
 - consider inviting local officials to self-identify as potentially interested and willing to learn more about the hosting a federal interim waste facility in their community.
 - provide descriptive materials, including safety and security measures, on a dedicated webpage where community leaders and residents could explore pros and cons and engage internally.
 - provide examples of types of incentives and benefits within the capability of DOE and contractors.

Ultimately, CATF believes this approach will be more successful and more efficient.

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

Agencies across the federal government have expanded public outreach to guide development of their Justice40 programs, racial equity plans, and other related initiatives. These have extended beyond traditional public comment processes, with expanded use of listening sessions, small community conversations, webinars, toll-free numbers, direct email, online portals, and even WhatsApp communications to allow community members to learn about opportunities and share their input in a way that is accessible, comprehensible, and convenient. The Department should adopt (if not already underway) these innovative, flexible and inclusive modern processes to more effectively engage directly with communities as well as local, State and Tribal governments.

Other best practices that should be adopted by the Department include the use of regular, consistent communication channels to communicate early and often, using easily accessible and understandable language and images. The Department should be sure to ask community members how they prefer to receive information and should offer communities multiple ways to engage in multiple languages. These should include options for communities who lack internet access. In-person meetings should be held in a trusted location in the community, such as a community center, school, or library. The Department should also consult with local leaders to identify barriers to understanding and involvement.

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Communities, governments, and other stakeholders need accessible information on risks, impacts, benefits, and any other factors the Department and interim storage contractors think are relevant. This information should be available in plain language and translated into appropriate languages. Additionally, consent may hinge on transparency around what communities are being considered for interim storage sites nationwide, including their demographics and the reasons they were chosen.

Conclusion

CATF commends the Department for issuing this RFI toward the development of a consolidated interim waste storage capability. While CATF appreciates any progress on spent nuclear fuel management, it is important to note that a comprehensive approach, incorporating storage, transportation, disposal, and potential recycling/R&D, offers more likely success for implementation than a piecemeal approach. The challenges of developing interim storage options in isolation, in many ways, may be insurmountable unless coupled with more broad spent nuclear fuel management aims.

Thank you for the opportunity to submit these comments.

Respectfully submitted,

Brett Rampal, Director of Nuclear Innovation

[REDACTED]
Clean Air Task Force

[REDACTED]
[REDACTED]
[REDACTED]

From: James Ramsay
Sent: Friday, March 4, 2022 1:35 PM
To: Consent Based Siting; Trunzo, Alisa; [REDACTED]
CC: Rendahl, Ann (UTC); Anthony J. O'Donnell -PSC-; Amanda Best (a [REDACTED]); Greg White; Zitelman, Kiera; Jasmine McAdams; [REDACTED]
Subject: [EXTERNAL] "RFI: Consent-Based Siting and Federal Interim Storage" - - - Comments of the National Association of Regulatory Utility Commissioners
Attachments: 2022 0304 NARUC response to DOE RFI on Consent Based Siting.FINAL.pdf

Attention Alisa Trunzo:

As per the instructions in the December 1, 2021 Federal Register Notice, The National Association of Regulatory Utility Commissioners respectfully submits the attached comments. For your convenience, I have also pasted them in full text in the body of this e-mail. Please do not hesitate to contact the undersigned by e-mail or at [REDACTED] if you have any questions about these comments.

Keep safe and have a great weekend

Brad Ramsay
NARUC General Counsel

TEXT OF ATTACHED COMMENTS:

1 | Page

March 4, 2022

Office of Nuclear Energy
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

Sent Via Email: consentbasedsiting@hq.doe.gov

RE: Response of the National Association of Regulatory Utility Commissioners to DOE's RFI on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 [Federal Register](#) 68,244 (Dec. 1, 2021)

The National Association of Regulatory Utility Commissioners (NARUC) is recognized by Congress in several statutes¹ and consistently by the Courts² as well as a host of federal agencies, including the Nuclear Regulatory Commission³ as the proper entity to represent the collective interests of State public utility commissions. NARUC has been an active and integral participant in discussions on nuclear waste disposal since their inception in the 1970s. We appreciate the opportunity to offer comments on the Department of Energy's (DOE) Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities.

¹ See 47 U.S.C. § 410(c) (1971) (Congress designated NARUC to nominate members of Federal-State Joint Board to consider issues of common concern); See also 47 U.S.C. § 254 (1996); *NARUC, et al. v. ICC*, 41 F.3d 721 (D.C. Cir 1994) ("Carriers, 1234

to get the cards, applied to...(NARUC), an interstate umbrella organization that, as envisioned by Congress, played a role in drafting the regulations that the ICC issued.”)

² See, e.g., *United States v. Southern Motor Carrier Rate Conference, Inc.*, 467 F. Supp. 471 (N.D. Ga. 1979), *aff’d* 672 F.2d 469 (5th Cir. 1982), *aff’d en banc on reh’g*, 702 F.2d 532 (5th Cir. 1983), *rev’d on other grounds*, 471 U.S. 48 (1985) (where the Supreme Court notes: “Throughout this litigation, the NARUC has represented the interests of the Public Service Commissions of those States in which the defendant rate bureaus operate.” 471 U.S. 52, n. 10. See also, *Indianapolis Power and Light Co. v. ICC*, 587 F.2d 1098 (7th Cir. 1982); *Washington Utilities and Transportation Commission v. FCC*, 513 F.2d 1142 (9th Cir. 1976); Compare, *NARUC v. FERC*, 475 F.3d 1277 (D.C. Cir. 2007); *NARUC v. DOE*, 851 F.2d 1424, 1425 (D.C. Cir. 1988); *NARUC v. FCC*, 737 F.2d 1095 (D.C. Cir. 1984), *cert. denied*, 469 U.S. 1227 (1985).

³ NRC Atomic Safety and Licensing Board *Memorandum and Order* (Granting Intervention to Petitioners and Denying Withdrawal Motion), LBP-10-11, *In the Matter of U.S. Department of Energy (High Level Waste Repository)* Docket No. 63-001-HLW; ASLBP No. 09-892-HLW-CABO4, mimeo at 31 (June 29, 2010) (“We agree with NARUC that, because state utility commissioners are responsible for protecting ratepayers’ interests and overseeing the operations of regulated electric utilities, these economic harms constitute its members’ injury-in-fact.”)

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The concept of consent-based siting has been examined by successive generations of U.S. policy makers.⁴

The most important question raised by the notice: “*To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?*”

In comments in previous proceedings and before Congress, NARUC has consistently pointed out that the most cost-effective way to proceed is to finish the pending license proceeding for Yucca Mountain. However, whether or not the Yucca Mountain license proceeding is completed, NARUC offers the following:

1. Consent (or progress) on permanent disposal is a pre-requisite to any real progress on interim storage.

There is no question that getting consent for an interim facility will be, at a minimum, much more difficult unless there is a permanent repository on the horizon – whether or not it is Yucca Mountain. As history demonstrates,⁵ lacking that, the debate on an interim facility in a state, territory or tribe will necessarily devolve into a debate over siting a *de jure* permanent repository. To facilitate getting consent for an interim facility, DOE must persuade state and local officials the facility will indeed be “interim.” Given the US government’s lack of progress on disposal issues, no sentient person is going to accept anything less than the existence of a suitable site for a permanent repository. Moreover, such a site will need to be located in a jurisdiction where DOE has already gotten “consent” - however defined – or has an ongoing license proceeding actively underway.

⁴ In early 1980, President Carter accepted the recommendation of the Interagency Review Group (IRG) to use “consultation and concurrence” to guide siting - requiring a state to “be in agreement with each step of the [repository development] process.” “Report to the President by the Interagency Review Group on Nuclear Waste Management,” TID-29442, U.S. Department of Energy, Washington, D.C. (1979), p. 88. Although the bulk of that report’s recommendations were included in the 1982 Nuclear Waste Policy Act, Congress changed “consultation and concurrence” to “consultation and cooperation” veering away from consent before eliminating it entirely in the 1987 Nuclear Waste Policy Amendments Act (NWPAA). The NWPAA also established the Office of the Nuclear Waste Negotiator and charged it with negotiating agreements with a state or tribe to host either a geologic repository or a centralized spent fuel storage facility. Congress abolished the office in 1995 before it could complete negotiations with the Mescalero Apache Tribe in New Mexico which, at the time looked promising. During the Obama Administration, a “blue ribbon panel” was convened that created a 2012 “Report to the Secretary of Energy,” Blue Ribbon Commission on America’s Nuclear Future, U.S. Department of Energy, Washington, D.C. (2012), which again made consent based siting the centerpiece of its recommendations. Finally, during the Trump Administration, DOE released an “Invitation for Public Comment to Inform the Design of a Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities,” 80 Fed. Reg. 79,872 (Dec. 23, 2015).

⁵ See, e.g., Bryan, Susan Montoya, “New Mexico Debates bill to Block [“Interim”] Spent Nuclear Fuel Storage” (US News and World Report (February 1, 2022) (“ Gov. Michelle Lujan Grisham and members of New Mexico’s congressional delegation

already have voiced strong opposition to building a multibillion-dollar facility . . .that would store tons of spent nuclear fuel.”) After regulators approved [an alternative site in TEXAS], Abbott, the Republican Texas governor, tweeted: “Texas will not become America’s nuclear waste dumping ground.”) online at: <https://www.usnews.com/news/politics/articles/2022-02-01/new-mexico-debates-bill-to-block-spent-nuclear-fuelstorage>. The NM legislation did not pass – but the governor and a number of legislators still oppose the facility. Texas passed a law in 2021 banning storage OR disposal of high level waste in Texas. See also, “Utah N-Waste Site Backers Call It Quits,” *Salt Lake City Tribune*, December 26, 2012.

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2. *Progress on a permanent repository will be handicapped if DOE focuses only on getting “consent” for an interim facility.*

The converse is also true, in the unlikely event DOE *can* get “consent” to site an interim facility, it will necessarily undermine any progress on getting consent to site a permanent repository (and also for completing the Yucca Mountain licensing proceeding). Certainly, it will significantly erode the urgency to require a permanent solution for Congressional representatives from any of the 36 states with “on-site” “interim” storage at either an operating or decommissioned plant. The strongest proponents in Congress for a nuclear waste solution will always be those that have waste stored “back home.”

3. *Consent (or progress on the existing license proceeding) on a permanent repository provides more information for siting an interim facility.*

DOE should make every effort to limit overall costs of any interim or permanent solution to the American taxpayer. Progress in locating a permanent repository has the added benefit of allowing DOE to consider the transportation costs and proximity to the permanent disposal sites of any interim facility. Because of this linkage, there is no logical reason for DOE not to focus on the Yucca Mountain site.

If DOE defines and implements a consent process, that process must be the same for both a permanent and interim facility. Why? In the absence of a permanent repository – or progress in the Yucca Mountain proceeding - any state agreeing to an “interim” facility bears a considerable risk it will become a permanent facility. History suggests DOE should find volunteer communities with suitable locations and then focus on working with the state legislature to pass legislation with “iron clad” consent – perhaps conditioned on appropriate safety findings by the Nuclear Regulatory Commission in approving the license. The Yucca Mountain facility has not gotten past the license stage because of state level opposition. The community around the site favors the repository as it means long term jobs and a bigger tax base. Similarly, current objections to even the “interim” storage facilities in New Mexico and Texas are focused at the state level.⁶

State legislation is the best way to limit problems caused by the changes in government offices/representatives over the course of final certification and construction of any facility. However, taking that approach means the state is going to want some sort of benefit above and beyond the typical advantages the local community will accrue, such as long-term jobs and increased tax base. If there is no realistic progress on a permanent repository, then any state level benefit offered for interim storage is likely to be of the same scale and scope that might persuade any state – including perhaps Nevada – to agree to a *permanent* repository.

6

See note 5, *supra*.

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Whatever DOE would consider offering as an incentive to get state officials to “consent” to an interim facility is likely to be at a level that would also generate “consent” for the siting of a permanent repository.

If this type of quid pro quo “consent” ends up being DOE’s chosen model, the Department should immediately open negotiations with Nevada State officials with respect to Yucca Mountain. However DOE

ultimately defines “consent”, achieving progress on a permanent repository will make siting an interim facility less expensive and easier. The most efficient way to proceed and get to a solution quickly is to jump-start the Nuclear Regulatory Commission proceedings on the *current* Yucca Mountain license application. The NRC staff has already issued the Safety Evaluation Reports. Moreover, the costs of concluding the hearings and getting a final NRC decision on the adequacy of Yucca Mountain are a tiny fraction of the costs of starting the process of finding a suitable location for a permanent repository or a *de jure* permanent “interim” facility again with multiple sites. If the license is not approved – then DOE will have to start over, if not, then Congress will have to figure out how to break the political logjam.

As NARUC has consistently stated, continued storage at permanently shutdown plants is unacceptable. It imposes costs on ratepayers without equivalent benefits and, at shut down plants, prohibits economic reuse of the site. While the true relocation and consolidation of nuclear waste may reduce the government's liability and improve security, no interim storage should be allowed unless and until the review of the Yucca Mountain License application is underway. A copy of NARUC's most recent resolution on Nuclear Waste Disposal, which covers interim storage issues, is attached. If you have any questions or concerns about NARUC's positions, please do not hesitate to contact the undersigned at [REDACTED] or [REDACTED].

Sincerely,

James Bradford Ramsay
GENERAL COUNSEL
National Association of
Regulatory
Utility
Commissioners

March 4, 2022

James Bradford Ramsay
General Counsel
National Association of Regulatory Utility Commissioners

[REDACTED]
[REDACTED]
General: 202.898.2200
Directline: [REDACTED]
Mobile: [REDACTED]
E-Mail: [REDACTED]
Website: www.naruc.org Staff page: <http://www.naruc.org/about.cfm?c=staff>



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N A R U C
National Association of Regulatory Utility Commissioners

March 4, 2022

Office of Nuclear Energy
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

Sent Via Email: consentbasedsiting@hq.doe.gov

RE: Response of the National Association of Regulatory Utility Commissioners to DOE's RFI on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 [86 Federal Register 68,244](#) (Dec. 1, 2021)

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To facilitate getting consent for an interim facility, DOE must persuade state and local officials the facility will indeed be “interim.” Given the US government’s lack of progress on disposal issues, no sentient person is going to accept anything less than the existence of a suitable site for a permanent repository. Moreover, such a site will need to be located in a jurisdiction where DOE has already gotten “consent” - however defined – or has an ongoing license proceeding actively underway.

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⁶ See note 5, *supra*.

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A copy of NARUC’s most recent resolution on Nuclear Waste Disposal, which covers interim storage issues, is attached. If you have any questions or concerns about NARUC’s positions, please do not hesitate to contact the undersigned at [REDACTED].

Sincerely,

James Bradford Ramsay
GENERAL COUNSEL

**National Association of Regulatory
Utility Commissioners**

[REDACTED]

March 4, 2022

From: Rebecca Ramsay
Sent: Monday, February 21, 2022 9:21 AM
To: Consent Based Siting
Subject: [EXTERNAL] Federal Interim Storage of Nuclear Waste

Temporary locations for storage of high-level nuclear radioactive waste should be as close to the power plants themselves as possible. In this way, the storage containers can be monitored on a regular basis for the protection of nearby communities.

Hardened On-Site Storage (HOSS) is preferable to transporting hazardous nuclear waste to other locations, posing serious risks to areas it would be passing through. In addition to population centers, other areas at risk would be freshwater sources essential for drinking water, natural ecological habitats, and for croplands. Especially strict monitoring will be needed for power plants near coastal locations to prevent contamination of saltwater and to protect ocean species.

Continuing to decommission nuclear power plants will result in safer communities and nearby natural areas.

Sent from [Mail](#) for Windows

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

From: Philip Ratcliff
Sent: Sunday, February 6, 2022 10:32 PM
To: Consent Based Siting
Subject: [EXTERNAL] Nuclear waste storage

Please accept my comments regarding consent-based siting of nuclear power plant waste storage.

Any legal authority for DOE to take title to and liability for commercial irradiated nuclear fuel at a federal CISF, in the absence of a permanent geologic repository, was very limited as to the quantity that could be stored there (1,900 metric tons), was for emergency purposes only, and expired more than three decades ago, in 1990.

Federal CISFs would multiply the highly radioactive waste transportation risks, while accomplishing no increase whatsoever in the safety, security, health, or environmental protection associated with the storage of irradiated nuclear fuel.

Philip Ratcliff, [REDACTED]

Sent from [Mail](#) for Windows

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

From: N. Rice
Sent: Thursday, March 3, 2022 11:20 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: 3.3.22 letter to DOE about consent based siting .docx

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March 3, 2022

My comments to the DOE specifically related to

Area 1, Consent-based Siting Process, #7 What other issues should the Department consider in a consent-based siting process?:

My opinion is that until such time as a permanent High Level Nuclear Waste facility is found and established that is based on sound scientific geology and in as safe a place as possible, that you should STOP going through this charade as if an Interim storage facility makes any sense. I say this based on the following reasons:

- A CIS storage facility would very likely become a permanent storage area because it is senseless to transport the waste a second time, so it makes sense to store the waste at or near where it was produced, making those sites as robust and safe as possible and obviously with the needed funding to take care of it.
- These would actually be temporary local storage sites which would be better maintained because the people in the area are right there and would be cognizant of their health in regard to taking care of it until a permanent waste site is found. They would also provide the public pressure for finding a permanent well -researched location based upon as just a process as possible.
- With a CIS, transporting the highly dangerous waste to the site would be totally irresponsible as it would have to go through our communities and our countryside hundreds or thousands of miles over a period of several decades as our present nuclear power plants are shut down and decommissioned.
- As time goes on at a CIS, people in the future will put it out of their minds and not want to invest the huge amounts of money to properly take care of it. Also, at some point – perhaps fifty years from now or sooner, the containers will leak and need to be transferred into new containers.
- Obviously this gargantuan problem should teach all of us that building any additional nuclear power plants is unthinkable and should not even be considered. This is assuming that we have a society whose values include caring about our children and for the health of future generations.
- Continuing public education is needed now and indefinitely into the future for citizens and for government leaders on the reasons why it is important to responsibly take care of this incredibly dangerous high level nuclear waste which is a health menace to us for hundreds of thousands of years.

Nancy Rice

[REDACTED]

[REDACTED]

NOTE: I would like my address and email address withheld from the public record of comments documents.

From: Jennifer Richter
Sent: Friday, March 4, 2022 1:07 PM
To: Consent Based Siting
CC: Michael Bernstein; Mahmud Farooque; [REDACTED]
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: ECAST Comment for DOE RFI 2022.pdf

Please include the attached document in your RFI for a CBS process for Interim storage of nuclear waste.
Thank you,
Jen Richter

Dr. Jennifer Richter (she/hers)
Assistant Professor
School for the Future of Innovation in Society
College of Global Futures
School of Social Transformation
College of Liberal Arts and Sciences
Co-Director, Local to Global Justice (localtoglobal.org)
Associate Faculty, Biodesign Pathfinder Center
Senior Global Futures Scientist, Global Institute of Sustainability and Innovations
Honors Faculty, Barrett, The Honors College
Arizona State University, [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

I acknowledge that ASU sits on the ancestral homelands of American Indian tribes that have inhabited this land for centuries, including the Akimel O'odham (Pima) and Pee Posh (Maricopa) peoples. I also acknowledge and pay respect to Indigenous elders – past, present, and future – as custodians of this land throughout the generations.

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**Consent Based Siting for Interim Storage of Nuclear Waste
Public Comment to DOE
March 4, 2022**

Comments submitted by:

Jennifer Richter [REDACTED] (
Mahmud Farooque [REDACTED])
and Michael J. Bernstein [REDACTED] .at)

Expert and Citizen Assessment of Science and Technology (ECAST), ASU

ASU Barrett & O'Connor Washington Center
1800 I Street NW, Suite 300
Washington, DC 20006
[REDACTED]

We submit this comment as a reflection of our collective experience working on stakeholder engagement for DOE as part of the Expert and Citizen Assessment of Science and Technology (ECAST) group at Arizona State University (ASU). We also submit considerations for informing a consent-based siting (CBS) process, specifically regarding the concept of consent itself.

We recently published a paper that is the result of our experience with working with the DOE on informing a CBS process. ECAST was contracted by the DOE in 2015-2016 to create a public forum for simultaneous day-long meetings in several locations across the U.S. This paper documents the process by which ECAST prepared for these forums, including engagement with diverse stakeholders to produce background materials for forum attendees, as well as negotiations with DOE to produce a meaningful contribution to creating a “process for a process” for initiating CBS for nuclear waste in the U.S.

The ECAST process was cut short in 2016, when the DOE cited a shift in the priorities for nuclear waste management by the incoming administration under President Trump. However, we believe that the lessons we learned from the endeavor are worthy of consideration by the DOE in their new initiative for CBS for interim waste. The paper briefly details the historical context of nuclear waste management to date in the U.S., as well as the ECAST process. We then identify and discuss the major barriers we encountered when engaging with DOE on the CBS process in 2015-2016: 1) The DOE’s focus on expediency; 2) imposed limitations on the scope of CBS; 3) bureaucratic obstacles to public input; 4) a lack of continuity in values across executive administrations; and 5) absence of top-level commitment to procedural and institutional learning, innovation, and adaptation.

This comment, based on our paper, responds to the following questions in the RFI:

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?
4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

For references, here is the full citation for the paper:

Richter, J., Bernstein, M. J., & Farooque, M. (2022). The process to find a process for governance: Nuclear waste management and consent-based siting in the United States. *Energy Research & Social Science*, 87, 102473.

Here, we relate our findings and reflections to the question of informing a CBS process for Interim Storage of SNF:

- 1) The DOE's focus on expediency is driven by a number of factors that are ingrained in the culture of the agency, but also shaped by existing policy decisions. The NWPA limits federal funding and attention to one site: Yucca Mountain. Due to the aggressive timeline laid out in the amendments in the NWPA, pressure to have Yucca Mountain open and operational has prevented any other avenue for creating a process for public engagement in exploring other options. The high-level technocratic approach for selecting Yucca Mountain alienated policy-makers and the public in Nevada, and the limitations of the NWPA in terms of examining other sites limits trust in investing in a process that ostensibly examines other sites. The Interim Storage path may seem more flexible in terms of options for site selection, but it is unlikely that any state will be amenable to hosting an interim site, due to the risk of any *de jure* interim site becoming a *de facto* permanent site. Without the option to explore other sites for a permanent repository, any interim sites are suspect. With the limitations of the NWPA, which imposes a timeline for Yucca Mountain without a process for public engagement, there is no way to legitimately create a process that can end in a different result than Yucca. Concomitantly, there has been little impetus for the DOE to develop a process for meaningful engagement with the public on SNF (as can be seen in the difficulty of public engagement regarding other nuclear projects, such as the Global Nuclear Energy Partnership, and Greater-Than-Class-C waste disposal). Hence, the NWPA must be amended to allow for direct public engagement, and allow for a CBS process that cannot be limited by arbitrary time frames.
- 2) While we understand the DOE's perceived need to limit the scope of discussion in public engagement for nuclear waste management to the process of CBS, any attempts to cordon off issues like the transportation of nuclear waste and the role of nuclear energy appear to be attempts to control the conversation amongst the public. For the ECAST project, a benefit was both the creation of balanced and accessible background materials that were honest about the thorny path to a CBS process, as well as the creation of a space for exploring ideas and values around nuclear waste management.

It is unsupportable that issues of cross-state transportation or state of nuclear energy in the US will not arise in these conversations. Telling the public that they cannot discuss these issues undermines confidence in the impartiality of a CBS process.

Furthermore, we note in our paper that, “From our experience, any entity entrusted with stewarding a future CBS approach must take genuine care and responsibility to invest in the capacity of its constituents to make informed decisions. Thus, any CBS process will need to clarify how communities can obtain and make sense of this information in a manner conforming to their needs and as part of a remedy to the larger injustices done by the power imbalance endemic to technocratic approaches.” This requires understanding that public engagement activities will provide insights into public participation in difficult and controversial scientific and technological innovations, but may not result in the operationalization of Yucca Mountain.

- 3) We note in our paper that the “restrictions of existing laws, including the NWPA and the PRA, deprive any aspirational CBS process of the time and flexibility necessary to build credibility and legitimacy.” The Paperwork Reduction Act (PRA) was a persistent barrier to collecting public input, as many of the themes and efforts in the ECAST project were reflective of other attempts to engage the public in SNF management. While a legitimate concern, the issue of public engagement for SNF management will require engaging several generations of Americans, necessitating some repetition of efforts and information exchange that can be perceived as redundant. However, for the public, it is critical to understand how public perceptions and values change over time; the attempt to create a CBS process is unique, and will require synthesizing past efforts into present-day engagement efforts, in order to create a more effective process for the future. The PRA will be a persistent barrier to creating this process.
- 4) The shift in priorities for any executive administration in the US creates a structural barrier to any CBS process. The priorities for executive agencies shift with any new president, which creates a systemic barrier for trust in any process. The Bush Administration (2001-2009) focused on renewing investment in nuclear energy through the 2005 Energy Policy Act, without attending to nuclear waste sites. The Obama administration (2009-2017) was committed to finding a new way to site nuclear waste repositories, which led to productive conversations about how to create a consent-based process informed by the public. However, the Trump administration (2017-2021) reverted to concentrating federal authority on opening Yucca Mountain, with no success. The last four years has meant that the CBS process languished; these hiatuses play havoc on public trust, and prevent the public from investing into public engagement activities. It is critical to protect a space for these discussions in a democracy in both policy and practice, to counter falling back on technocratic decision-making.
- 5) Finally, it is increasingly apparent that the DOE is not the right agency for creating a legitimate CBS process. This was a recommendation made by the BRC, and one that other countries have also followed, including the NWMO in Canada. For the U.S.

context, it is even more critical to have an independent body for engaging in a CBS process, as the U.S.' history with weapons production has left a legacy of mistrust for nuclear communities, who feel that they were lied to and misled concerning the risks of radioactive contamination of their lands and bodies. The technocratic approach to establishing Yucca Mountain as a permanent repository for nuclear waste contributes to a legacy of mistrust as well, effectively "poisoning the well" for DOE to be seen as a credible and legitimate source of information and guidance for a CBS process. However, we note in our paper that, "Independent of any CBS process, DOE should engage in such critical reflection with an eye toward relationship healing by focusing efforts on building public trust, rather than technical outcomes."

We believe that for any CBS process to have integrity and longevity, the above issues are pressing and need to be acknowledged and addressed. We offer our experience as part of the learning process for engaging with stakeholders collaboratively in creating a robust and ethical Intergenerational plan for managing nuclear waste.

Issues related to a CBS process:

This second section offers considerations regarding the concept of **consent**, and is informed by our creation of background materials created for the ECAST project. This material, created by the ECAST team and informed by a number of sources and stakeholders, would have been shared with the public if the project had continued. This section responds to the question posed in the RFI:

Area 2: Removing Barriers to Meaningful Participation

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

What we talk about when we talk about consent:

Public and stakeholder participation in nuclear waste management is about more than knowing what is going on and being heard—it's about having a role in planning and design of systems, in seeking remedial action for failings at any phase in the process, to monitoring government activities and understanding why actions are being taken, and reviewing performance according to mutually agreed criteria. Beyond structuring the process itself, there is the inherent subjectivity of the issues associated with concepts of siting risks and hazards. For example different people think and feel differently about issues such as:

- what constitutes an acceptable level of risk when, for example, considering transport of materials;
- how we value land or water when siting a facility;
- who should bear the burdens of these efforts, and how should such burdens be distributed; and
- what the benefits should be, and how these benefits might be distributed.

Coming to agreement among different levels of government, corporations and utilities, and the public about these rights, responsibilities, and conceptualizations of risk, hazard, and benefit needs to be at the heart of any new U.S. discussion about a consent-based process.

Any process to structure a consent-based process must use the opportunity to figure out how to balance public community determination and existing federal, state, and tribal political constraints in a number of domains. This overarching goal raises several vital initial questions to pose to public audiences:

What might even constitute the community?

Beyond physical or geographical place, when it comes to environmental or political issues, it's common to talk about "affected communities." In this context "affected communities" may include:

- politically defined entities, such as local host municipalities, counties, and states in which a site is located, as well as abutting municipalities, counties, and states
- social groups, including neighborhoods
- interest groups, forged around a common set of values, fears, or experiences, regardless of location

Since any disposal facility will last for thousands of years, and any storage facility might have an indeterminate life time, another challenge is creating a process that can be adjusted based on changes in communities and the country over time.

How might communities indicate consent to elected leaders or official organizations?

Beyond any initial step of a community identifying itself as a potential host, there are many different times in a consent-based process when decisions will have to be made. These decisions will affect not the volunteering community closest to the proposed site, but also surrounding communities, a city, a county, or a state, and any communities impacted by waste transportation routes. Rules about how these decisions get made are important to establish in advance, keeping fairness and transparency in mind. Several strategies come to mind—consensus, super-majority, majority, systems—and may be mixed for use in different circumstances. Of course, any voting processes themselves ought to be monitored by independent, legitimate outside groups—a step toward transparency that helps build trust and confidence in the process.

How might communities be informed?

A range of types of information, provided by a range of different expertise, is needed for community informed consent. Information needs might range from information about proposed activities; vested interests; potential risks and benefits; long-term implications for public health and safety and the environment; relevant laws; uncertainties; and how other communities facing similar proposals found ways to address concerns and prevent or mitigate negative impacts. Ideally, such information should help a community address all potential negative aspects of a facility, and the range of ways to make a host community better off in the process. Most importantly, it is not just provision of information that counts but demonstrated increases in

understanding on the part of community members of measures and implications deployed in all stages of a consent-based process.

How to build trust in the process?

At the end of the day, before effective negotiations can take place with the federal government, host site communities need to trust that their tribal, local, state, and federal representatives will act on their community's behalf, to act fairly and equitably, and to ensure the wellbeing of the community. To do so, as discussed above, it will be vital to ensure the decision-making process is clearly understood and transparent and decision-makers are accountable for judgments made on the community's behalf. Timelines and processes should be reviewed semi-regularly so that changes or adaptations can be made. A phased and adaptive process should be robust but not impervious to change. Consider the following, more specifically:

- **When planning engagements:** have a clear plan for when information will be provided, input will be gathered, and how the organization will respond to input. Make it easy for publics, stakeholders, and communities to participate. Ensure that opportunities do not restrict participation inadvertently (e.g., day time meetings only).
- **When providing information:** make reports easy for the public to access. Share information in multiple formats (and languages, as necessary). Ensure results are clearly titled, organized, and searchable. Provide support for communities and outside groups to gain independent input and to interpret the information. Be clear about uncertainties and gaps in knowledge.
- **When gathering input:** give enough time for people to respond. Make sure that any time limits are strictly held, and equal for everyone. Make sure that the people facilitating the conversation and answering questions are respectful. Provide for events that build understanding.
- **Using input:** set clear expectations on how input will be used in a decision process. Make sure to explain when and how information relates to decisions or continued development of the process. Follow through on the plan.

Withdrawing consent

Establishing clear milestones in the process, including when, why, and how communities can withdraw from the process, is one of the ways that communities can exert influence and authority in the absence of the right to veto. But provision of veto rights might be a necessary step to consider in any revision of the NWPA to enable a genuine CBS. Historically and under current law, only states and tribes have the authority to veto decisions to site nuclear waste repositories. Such vetoes can be overturned by Congress. For a consent-based process, where there is currently no formal veto right for affected communities that are neither states nor tribes, a helpful question to consider is when communities might be allowed to withdraw consent.

Flexibility and adaptability

Any changes to federal law that would allow for a consent-based siting approach will take time. Once laws are clarified, discussions among the federal government, states and tribes, and affected communities will also take time—in the case of the Waste Isolation Pilot Plant, a defense-related transuranic waste repository in New Mexico, it took 25 years. In addition, there

is also the time needed for making sure a potential host repository site will work from a technical perspective—a process that has taken every country that has tried at least 20 years.

Transportation planning to move waste materials will also take time, possibly 10 years or more. Time also means money: estimates for the life cycle of Yucca Mountain, if built—from licensing to construction, to operating and closing—total more than \$95 billion (and that's only for the first few centuries). Even if some of these milestones unfold at similar times, setting up and seeing through a consent-based process is likely to take decades. The more time that passes before spent nuclear fuel and high-level waste are taken responsibility for by the government, the more communities and states, which were never asked to host radioactive waste for the long-term, become de-facto storage sites; the more costs will be borne by taxpayers through the nuclear waste fund.

Additional public input is needed to help scope the content of consent-based processes once potential communities seem identified will need to have established a host of key milestones might be; negotiate when consent might be withdrawn or vetoes exercised; ways to have the process stand the tests of time; and indication of what might make for a successful process. Although each milestone in the process takes time, considering that any repository would be built as a permanent facility, the time put in up-front would be a hugely valuable investment.

Specific Recommendations:

Milestones

Because a consent-based process has to respond to many interests and potentially changing circumstances, instead of a strict timeline, it is more useful to think about the process as unfolding over key milestones. Canada's approach, as adopted by its Nuclear Waste Management Organization, which placed public interactions at the center of its process, provides a useful set of examples for thinking about milestones in a consent-based process. The NWMO offered at least seven high-level milestones related to: designing a siting process, implementing a siting process, assessing the suitability of candidate sites, selecting a site, conducting the licensing and assessment process, operating and monitoring the facility and deciding when to close the facility.

Each NWMO milestone includes many activities and considerations. For example, designing the process for site selection included collaborative efforts with citizens around issues such as determining the objectives of and principles for a siting process. There were also collaborative efforts related to establishing major milestones; developing criteria to apply in decision making; and considering how traditional knowledge and concerns from indigenous and tribal communities can be respected and incorporated into the process. The establishment of an independent environmental monitoring program (separate from and complementary to the Canadian Nuclear Safety Commission assessments) was critical to the process, as was collaboratively agreeing how information sharing and communication and collaboration would happen throughout each milestone. Efforts at such an early phase also included conversations about initial screening of areas against preliminary criteria that interested host communities would need to meet.

Adaptability for the long-view

The ability of different milestones to allow for consenting, non-consenting, and withdrawing of consent will likely be closely related to the long-term flexibility and strength of a phased and adaptive process for siting a geologic repository. Major questions for any phased and adaptive consent-based approach are how to allow the process to be at once flexible, but also sustain momentum? How to allow for changing agreements as conditions change, yet also to be legitimate and remain enforceable? Over an operational lifespan of 150 and more years, and the centuries beyond a consent-based approach needs to be flexible enough to accommodate changes, to circumstances and technology, as well as needs, values, and the foundations of our economy, and still allow for decisions to be made and actions taken.

Defining Success Over Time

A successfully sited repository may not come from a consent-based process, and a successful consent-based process may not result in a sited repository. This creates an inherent tension within the Department of Energy, which has at once come out with a commitment to a consent-based process, but also has a legal mandate to take responsibility for the nation's civilian spent nuclear fuel and high-level waste. This tension is yet another reason to consider overhauling the NWPA and question the suitability of DOE as long-term steward of a CBS. A final determination of success may only be made after thousands of years of operation without any significant release of hazardous radioactive waste, and until the wastes no longer present any threats to life. Because waiting that long to define success is impractical, there are other ways to think about critical victories that can be achieved along the way. For example, success can be measured in terms of how the process holds to agreed upon features like fairness and transparency. Success can also be measured in terms of reaching interim outcomes agreed upon in the process, for example, the shipment of spent nuclear fuel and high-level waste away from reactor sites. Any CBS process to start the CBS process should spend time with people and communities building capacity to understand and address this set of issues, as well.

And what about failure?

Finally, changing definitions of success also means grappling honestly with the meaning of failure. Of course, in the most extreme case, if there were an operating facility, failure would certainly be clear in the event of accidents associated with the processes of isolation, transportation, or emplacement of radioactive waste. Another way to think about failure in a process is "making things worse" when it comes to trust and credibility and the overall management of the wastes. Already, many stakeholders are skeptical of the Department of Energy's ability to commit to and steward a consent-based process—low-levels of trust make it very difficult for even new and earnest attempts to take hold. As levels of trust in a consent-based process decrease, communication becomes more difficult; milestones have to be added, and decisions take longer, adding to the costs associated with the process.

Conclusion:

We state in our paper that: "An additional possible antidote to DOE's reticence and perhaps anxiety at ceding control to more deliberative processes could be to adopt an intentional

approach to experimenting with different forms of participatory engagement. The DOE could focus on building its capacity with different formats of public engagement and so contribute to informing a long-term legitimacy of a CBS process rather than focusing on expediency or efficiency in the process (incidentally contributing to building its integrity and public image in the process). These formats could include small, consensus group models over time, or the completion of the ECAST public forums, which even in revised form, could yield useful methods for creating an equitable CBS process. Critically, there is no one method to satisfy participatory justice issues; any process must be flexible and will be time-consuming.” We believe that in spite of the recent efforts of the DOE to engage in the creation of a CBS process, it will be impossible to create a process that is not influenced by the technocratic origins of the nuclear waste program, nor is it possible to create a legitimate and credible process within the confinements of the NWPA.

A major issue with the CBS process is that the solution is already technically derived -- the public can view DOE as just trying to see how to get a social license for what are very narrowly-derived options, namely, a permanent geologic repository. The DOE needs to consider “flipping the model,” by committing to a “capacity-driven framework” rather than an end goal driven framework. Public engagement studies that would contribute to developing alternate framings of the nuclear waste issue and use that to come up with citizen-framed scenarios could be part of this approach.

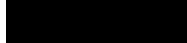
In parallel, there needs to be firm and binding political commitments to the CBS process, even if those conflict with the end goal of a permanent repository. DOE's role would be to fund the research (technical and social) that can inform the political and public engagement processes, and to engage in capacity-building with different publics. Ultimately, we urge the DOE to consider the CBS process as a means of engaging with skeptical yet interested publics on myriad (seemingly) technical issues, especially when they intersect with public concerns around human and environmental health.

From: McClure Tosch
Sent: Friday, March 4, 2022 10:09 AM
To: Consent Based Siting
CC: Conrad, Jill; Call, Paula K (DOE); Laurene Contreras; 'Rose Ferri'
Subject: [EXTERNAL] Yakama Nation Comments on the RFI for consent based siting
Attachments: YN Comments Consent Based Siting Process March 2022.pdf

Hello,

Attached are the Yakama Nation's comments on the Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities.

Thank you,

McClure Tosch
NRIA Lead
Yakama Nation ERWM


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Confederated Tribes and Bands
of the Yakama Nation

Established by the
Treaty of June 9, 1855

Dr. Kathryn Huff
Principal Deputy Assistant Secretary
Office of Nuclear Energy
1000 Independence Ave. SW
Washington DC, 20585

March 4, 2022

Re: Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify
Federal Interim Storage Facilities

Dear Dr. Huff,

Thank you for the opportunity to comment on the request for information (RFI) on a consent based-siting process to identify federal interim storage facilities. I am writing to provide history and technical comments from the Confederated Tribes and Bands of the Yakama Nation (Yakama Nation). Our comments are crucial to consider in the Department of Energy's next steps on developing a "Consent-Based" siting process. We are focused on the Hanford site since it is fully within our homelands but DOE should consider how our concerns are applicable to this process outside of Hanford as well. I have provided background information first because it relates to the three areas the RFI has requested responses on.

Yakama Nation's connection to the Hanford Area:

The Hanford site is culturally significant to the Yakama people for many reasons. It has been a traditional use area since time immemorial. This land provides foods and medicines that cannot be found any place else. It was a traditional winter camp, due to the milder weather and the abundant resources available from the Columbia River. Because of the unique microclimate in this area traditional foods and medicines were ready for harvest before any other place in the area, making the area significant for first foods gathering and the associated ceremony. The cultural practices, traditions and beliefs associated with activities such as; hunting, food gathering and processing, vision quests, religious ceremonies, and fishing are rooted in the traditional history of the Yakama community and are critical in maintaining the continuing identity of the Yakama Nation through their connection to this land.

The Hanford cultural landscape with the mountains, uplands, plateau, riparian zone, shoreline, and river is full of some of the most intact archeologic sites in the entire region, giving clear evidence of the continuous use and importance of the area to the Yakama people. This land scape has multiple traditional cultural properties, sacred sites, and traditional use areas that have been evaluated and are eligible for listing on the National Register of Historic Places. Any federal decisions that may affect any of these areas and the character defining features that make these sites eligible for listing on the National Register will constitute an adverse effect under the National Historic Preservation Act of 1966.

"Hanford was valuable to us. And so, therefore when the treaty was made in 1855, we emphasized the value of the Hanford area, and we continued to try to emphasize it." (Russell Jim 2016)

It is important for Federal, State, and private entities to appreciate the nature of our present rights. In the Treaty of 1855 we ceded over 12 million acres of land to the United States. That land now covers nine separate counties in central and eastern Washington. Our Treaty further reserved, "right of taking fish at all usual and accustomed places, in common with the citizens of the Territory, and of erecting temporary

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buildings for curing them; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land.” One of the first cases to test this right resulted in the 1905 *Winans v. U.S.* decision. The *Winans* decision ruled that private land owners could not prevent Yakama fishers from accessing an off-reservation usual and accustomed fishing place on the Columbia River. Numerous federal court decisions since *Winans* have reaffirmed our Treaty fishing rights in the Columbia Basin. Those decisions have also held that Treaty fishing rights are property rights with all the legal protections associated with a property right.

The Hanford site is located within the Treaty area of the YN where we retain all of the rights to the natural resources mentioned above. Due to the releases of hazardous substances at the Hanford site Yakama Nation has been restricted and in most cases barred from exercising its treaty rights within the Hanford site.

Yakama Nation’s Work on Nuclear Waste:

The Yakama Nation has always been concerned about the activities at the Hanford site as soon the United States began to restrict our ability to exercise our Treaty reserved rights at the site in the 1940s. It was not until the 1970s when the Department of Energy began to reveal the full extent of the operations and volume of nuclear waste that we became more aware of the hazards that have been introduced to our homelands.

By 1978 it the United States was actively looking for a place to dispose of high-level waste. At first, there was a strong push to make Hanford a location of a deep geologic repository for high-level waste known as the basalt waste isolation project (BWIP). In order to have our voices heard the Yakama Nation made the push to be recognized as an affected tribe under the Nuclear Waste Policy Act. This effort and the work that followed was led by the late Russell Jim. The Yakama Nation along with many others expressed our technical and policy level concerns with BWIP and eventually it was removed from consideration in 1987.

Since that time the Yakama Nation and has been a leader in the review and response to issues surrounding high-level waste and its disposal. The Yakama Nation has a special Tribal Council committee that focuses on all things related to Hanford cleanup and nuclear waste. In addition, our Environmental Restoration / Waste Management program works only on Hanford and nuclear waste issues via a cooperative agreement with the DOE.

Request For Information Responses:

Our responses are broken out by each area identified in the RFI but many of our comments relate to all three areas.

RFI Area 1: Consent-Based Siting Process

DOE and the Biden administration have made strong commitments to improving relations with Tribal governments and to fully considering our interests. This process needs to uphold the United States fiduciary responsibility to the Yakama Nation and avoid the impacts decisions interim storage can have on our Treaty reserved rights. Currently the Yakama Nation does not have free access to our Treaty reserved rights at Hanford but that is the goal. A process that will base decisions on majorities, costs savings, or general public acceptance will ultimately fail to consider the impacts to the Yakama Nation. DOE must create a transparent process that is collaboratively developed with the Yakama Nation.

In addition, each potential site will have a different set of governments and laws to consider. The process should also be consistent with federal, state, and tribal laws that will have an impact of citing any site. The largest barrier to a successful siting of interim storage is the fact that there is not final disposal location. Any interim storage facility has the strong likelihood to become the defacto disposal facility.

This does not give a lot of confidence that any decisions made will lead to disposal. We believe that disposal and storage should not be separated from each other.

Area 2: Removing Barriers to Meaningful Participation

The potential barrier that is most apparent to the Yakama Nation is consideration of our Treaty rights in the process. We have engaged in consensus based processes with Federal, State, and Local governments on all sorts of matters. Often we are forced to defend our standing and status as a co-manager of resources rather than being treated as an equal. DOE must find a way to fully recognize our standing and ensure that our concerns are not buried by the comments of others.

Funding to tribal governments to engage in this important process is crucial due to our resources being committed to other work already. If travel or specific technical expertise is required that should also be considered in the funding allocation.

Area 3: Interim Storage as Part of a Waste Management System

For the Yakama Nation the process must fully recognize and consider impacts to our Treaty reserved rights and impacts to our culturally significant places. In addition, DOE must recognize that no one but the Yakama Nation can speak for the impacts a decision could have on our resources.

As mentioned above we believe that interim storage and disposal can't be separated. We believe that work on interim storage by itself is not a useful endeavor due to the fact that we would be speculating when/where disposal would be available. DOE would have a much more transparent process if work on disposal was being done first or in parallel.

Conclusion:

We appreciate the opportunity to provide response to this RFI on a consent based siting process. This process must fully consider the Yakama Nation's Treaty Rights and also include disposal in order for it be meaningful. The information we have provided to you in this letter is only a sample of our history, work, and thoughts on nuclear waste management and disposal. We look forward to further discussions with you and your staff on this important matter. Please have the appropriate staff follow up with Laurene Contreras, ER/WM program administrator, 509-830-2499.

Sincerely,



Phil Rigdon, DNR Superintendent
Yakama Nation

Cc: Laurene Contreras, YN
Jill Conrad, DOE
Paula Call, DOE

From: Aaron Robb
Sent: Friday, February 25, 2022 12:24 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Aaron Robb



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From: Eric Robson
Sent: Wednesday, March 2, 2022 9:42 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Eric Robson



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From: Priscilla Rocco
Sent: Friday, February 25, 2022 7:59 PM
To: Consent Based Siting
Subject: [EXTERNAL] Answers to RFI

I have answered two questions you listed.

2-1.

The barriers to participation are the fact that the government has no credibility as a good steward of the environment.

Every military base has allowed its water, air, and land to be contaminated, despite the risk to our soldiers. The government refuses to pay for the treatment of the soldiers who were sickened by the burn pits they were ordered to create and tend overseas. My niece lived near Edwards Air Force Base in Lancaster and didn't find out until after they had bought their house that they couldn't drink the water. They couldn't afford to move, so they had to bathe in it and wash their dishes in it, and her daughter developed epilepsy.

The government was a partner to, and helped cover up, the nuclear meltdown at the Santa Susana Field Lab in 1959 above Simi Valley. We lived there and never knew. You have sided with the corporations to avoid cleaning up the site, despite the cluster of children and adults who have and are dying of cancer and other illnesses. Half my thyroid was removed when I was 15 due to pre-cancerous growths. Instead you are trying to rebrand it as an indigenous site and park and opening it up to visitors with all the nuclear and toxic pollution left to continue killing those nearby.

Calling it Waste Management instead of nuclear waste is just rebranding. It doesn't change your track record with nuclear waste. Within 34 miles of my current house, Southern California Edison was allowed to store 3.5m pounds of spent nuclear fuel at

San Onofre Nuclear Plant in inferior containers in an earthquake area 108 feet from a rising sea, near millions of people. If Fukushima taught us anything, it proved this is a disaster in the making.

2-5

The information required to ensure participation in this program is to prove that the government is environmentally responsible. Instead of partnering with Waste Management, the DOE should just do its job and clean up all of the contaminated military bases and sites like the Santa Susana Field Lab. Why should people allow you to store waste with a ten thousand year half-life near them, when it will just mean death to all who live nearby.

Priscilla Rocco

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From: David Rosen
Sent: Thursday, February 24, 2022 6:16 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: Consent based siting for nuclear waste.docx

I am a Certified Petroleum Geologist living about 50 miles from the Andrews County proposed High Level Nuclear Waste Dump. Attached are my comments regarding consent based siting. I have worked in this area for 49 years doing various petroleum field work in exploration and development for petroleum. The Permian Basin provides 20% of the nation's energy. We don't need addition nuclear waste potentially eliminating this area from production due to accidents, spills, etc. Both Midland and Andrews Counties have publicly said they don't consent, along with New Mexico. Please consider my attached thoughts.

--
David Rosen, [REDACTED]

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Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

The Department should have Community-wide input, not just elected officials. Communities should be notified of a potential meeting 6 weeks, 4 weeks, 2 weeks and the week of any community-wide meeting on 'consent based siting'. Meetings should be in-person and on-line in the event some are not able to attend in person. There should be Radio and TV ads as well as newspaper ads in the nearest regular publication.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Governments and officials may give their input but only after the public has been heard. Comments from high officials may intimidate unelected local people.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

Those who enjoy engaging in dangerous activities might like dealing with radioactive materials.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

The impediments are a. Radioactive materials b. No permanent repository exists c. there is no date certain that a permanent repository will ever exist. These problems could be solved by first establishing a permanent repository BEFORE any 'interim' sites are planned.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

Be honest about the dangers of transportation throughout our nation as well as discussion about problems that have existed for 80 years as in the Tri-Cities area, etc.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

After establishing a permanent repository, the Sierra Club, Public Citizen and others who do not profit from the nuclear industry can be trusted to critique siting.

6. What other issues, including those raised in the *Draft Consent-Based Siting Process* ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process.pdf)

Siting Considerations.pdf), should the Department consider in implementing a consent-based siting process?

Consider so-called ‘private sites’ for consent based siting such as the ISP site in Andrews Texas. The local community as well as several cities and counties in Texas have said they DO NOT WANT high level nuclear waste coming through their areas. The NRC seems to be ignoring this though local opposition is strong. Those who favor the site are only those who are employed there or those who will profit by it. The area is part of the Permian Basin which provides 20% of U.S. petroleum production. A worldwide guide for the siting of nuclear waste dumps says on it’s first page; don’t site a dump where other minerals are mined. A traffic accident or spill could endanger oil and gas production which currently is highlighted as a national security issue.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

Establishing a permanent repository BEFORE interim storage would eliminate the need to move waste twice and completely avoid interim storage.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

Only organizations and individuals who have no monetary stake in the processing or storage of nuclear waste should be trusted to present non-biased information.

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

Seek trusted academics who have no monetary interest whatsoever in the nuclear industry along with environmental experts.

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities? See all above.

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

Design a system that would be in a wealthy community. Educate that community. Only when a wealthy community finds acceptance of nuclear waste in their midst should that be offered to lower income communities.

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

Any waste facility should be as isolated as possible. Having a manufacturing plant or other waste would increase the traffic and make for a more dangerous transportation system. In the event of an accident more people are threatened.

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

As I said before, a permanent repository should be the first concern and built to remove the “need” for any interim storage. Hardened onsite storage is working now. Why change it?

4. What other issues should the Department consider in developing a waste management system?

Build a permanent repository. Protect the United States by having fewer movements of nuclear waste that are always subject to potential accidents or terrorist activity. Eliminate the need for interim storage and some much more security in many places by creating a permanent repository. Do not ‘bribe’ poor communities with lavish funding. Any potential sites, not just federal sites, should have consent-based siting.

From: Philip Bartholomew
Sent: Friday, March 4, 2022 12:21 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: 302628aa Holtec International Response to RFI - Consent-Based Siting and Federal Interim Storage.pdf

Dear Dr. Kim Petry,

Holtec International and the Eddy Lea Energy Alliance are pleased to submit this joint response to the Department's Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities.

Best,

Phil Bartholomew
Business Development Engineer



www.holtecinternational.com

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March 4, 2022

Office of Spent Fuel and Waste Disposition
Office of Nuclear Energy, Department of Energy
1000 Independence Avenue SW
Washington, DC 20585
consentbasedsiting@hq.doe.gov

Attention: Dr. Kim Petry
Acting Deputy Assistant Secretary for Spent Fuel and Waste Disposition

Reference: Department of Energy, Notice of Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities [FR Doc. 2021-25724 Filed: 11/30/2021 8:45 am; Publication Date: 12/1/2021]

Subject: Joint Response by Holtec International and Eddy Lea Energy Alliance to DOE's RFI: Consent-Based Siting and Federal Interim Storage

Dear Secretary Petry:

Holtec International (Holtec) and the Eddy Lea Energy Alliance (ELEA) are pleased to submit this joint response to the Department's Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities. ELEA is a public body created through a joint powers agreement of the New Mexico cities of Carlsbad and Hobbs and the counties of Eddy and Lea and own 1,000 acres of land in Lea County geographically between Carlsbad and Hobbs optioned for the proposed HI-STORE Consolidated Interim Storage Facility (CISF). Holtec is a world-wide leader in HLW/SNF storage and transportation technologies and is seeking a license for the HI-STORE CISF to store spent nuclear fuel (SNF) on the ELEA site.

In the attached document, we provide our response to the RFI. The response is based in significant part on the experience that ELEA and Holtec have garnered over the past several years while working together in Southeast New Mexico and throughout the state. We believe that by adopting the type of consent-based system described in the attachment and with appropriate legislative authorizations, the Department of Energy (DOE) can – and should – determine that HI-STORE would be a suitable federal interim storage facility while, pending such designation HI-STORE will continue on its current path as a wholly private facility.

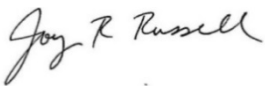
The Holtec / ELEA relationship is a unique and suitable structure for the Department to establish a consent-based storage site in southeast New Mexico. We urge the DOE to recognize that a one-size-fits-all consent-based process is both unnecessary and inappropriate. HI-STORE has the consent – through ELEA and its members – of the people who will be most directly affected. With a site that has been through safety and environmental review, the HI-STORE CISF provides an unprecedented opportunity to the Department to make good on the government's long-standing promise to defuel nuclear plant sites. ELEA offers a willing

group of communities that provides its consent to host the CIS to safely store spent fuel from the Nations' nuclear fleet. While DOE continues to look at other sites and perhaps other consent-based siting processes, we believe that the Department is in a position to determine that HI-STORE is an appropriate selection for a consent-based federal interim storage site. The solution is before you in the form of the HI-STORE CISF.

The challenge for a CISF politically, in the absence of a repository, is the pushback by those opposing interim storage for fear a CISF will become a de facto permanent storage facility. It is unfortunately the case that there has been no significant progress made to site and build a deep geologic repository at this time by DOE. We believe the Department can bring the affected state governors and Congressional delegations together to create a strong movement in Congress to solve the repository stalemate. A permanent repository is a critical infrastructure project if we are to get to 100% carbon free electricity generation in our country, which as we all know, will take base load, carbon free nuclear power to achieve the goal. Finland and Sweden are constructing permanent repositories. France and Canada are well on the way. This country should be able to do so as well.

We appreciate the Department's thoughtful consideration and review of our response to this RFI. We hope you will agree to meet with us to discuss using the HI-STORE CISF to assist the Department realize its vision for an integrated waste management system.

Sincerely,



Joy R. Russell
Senior Vice President and Chief Strategy Officer



John A. Heaton, Chairman
Eddy Lea Energy Alliance

Document ID : 302268aa

Holtec Response to RFI: Consent-Based Siting and Federal Interim Storage

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APPENDICES:

Appendix A:	Letter from DOE's Acting Assistant Secretary for Nuclear Energy Andrew Griffith to Dr. Kris Singh of Holtec, dated January 31, 2022
Appendix B:	Letter from New Mexico Governor Susana Martinez to Secretary of Energy Moniz, dated April 10, 2015
Appendix C:	Letter to New Mexico Governor Lujan Grisham submitted by the City of Carlsbad Mayor Janway, City of Hobbs Mayor Sam Cobb, Eddy County Chairman Steven McCutcheon, and Lea County Commissioner Jonathan Sena
Appendix D:	Letter to Secretary of Energy Granholm from Dr. Kris Singh, President & CEO, Holtec International and Mr. John Heaton, Chairman, Eddy Lea Energy Alliance, RE: Development of a Deep Geologic Repository for High Level Waste and Spent Nuclear Fuel, dated September 21, 2021

1.0 Introduction

Holtec and ELEA are pleased to present the following responses to the Department of Energy's Request for Information (RFI) related to the consent-based siting and federal interim storage of spent nuclear fuel.

2.0 Consent-Based Siting Process

Question 1

How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

Answer to Question 1: The Department should, as envisaged in Federal law, tailor its environmental justice considerations to the specific nature of a consolidated interim storage (CIS) installation (hereafter called "facility" or "CIS") guided by the determination of other governmental agencies such as the Office of Nuclear Material Safety and Safeguards (NMSS) within the Nuclear Regulatory Commission (NRC). For example, under current NMSS procedures, the potentially affected area is normally determined to be a radius of 0.6 mile from the center of the proposed site in urban areas, and four miles if the facility is located in a rural area. Under this guidance, the affected region will extend to 4 miles in all directions from the center of the project site for Holtec's HI-STORE CIS project in the rural southeast New Mexico. This delineation of the affected area should not be compromised by outlying unaffected areas whose interests may not be aligned with those of the affected inhabitants. The NRC standards for environmental justice considerations should not expand until some project opponent can find an allegedly impacted environmental justice population. Instead, the governmental agencies should actively sponsor educational seminars in the affected communities by qualified subject matter experts to disseminate information. The objective of environmental justice could be blocked if those unaffected by the facility have a disproportionate voice in the site selection process.

DOE should craft its environmental justice criteria to stress quantitative fulfillment of the needs and aspirations of the affected communities. We recommend the use of an environmental justice questionnaire to self-determine whether locating the CIS would comply with environmental justice in spirit and law. We would be pleased to share the questionnaire that Holtec developed with the DOE. The questionnaire should seek to ensure that:

- There will be no adverse impact on the health and well-being of the residents who live within the affected area around the facility.
- The local environment will not suffer any degradation that would impact environmental justice populations.
- The income generated by the facility will be shared with the local community to help improve their infrastructure, and tax burden.
- The facility will offer employment opportunities to the local residents to the extent possible.
- The facility will contribute towards helping improve the quality of life of local residents.
- The facility will not create a new type of accident that would endanger the lives or property of the people who live in the local communities.
- The facility shall be of the safest type available in the industry.

- The facility shall be capable of being decommissioned and repurposed for other industrial uses after its useful service life.

We would observe that Holtec employed these criteria to establish the suitability of the ELEA site and then ran, along with ELEA's leadership, a technology awareness campaign for the past 4 years. The success of our environmental justice process has become evident as the local communities are expressing unqualified support for the HI-STORM CIS project.

Question 2

What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Answer to Question 2

The agreement of consent should be limited to the host community which should be encouraged to consult with the Tribal leaders, State, and local governments and officials and other communities in the vicinity of the proposed facility.

It may not be possible to garner unilateral agreement to any action, especially to agree on a facility that is as emotionally charged as storage of spent nuclear fuel. The immediate locality of the project has the greatest likelihood of impact, particularly for a facility such as a CISF, involving the passive storage of SNF that was discharged from reactor years earlier. The role of Tribal, State, and local governments and officials beyond the host community should be that of regulators within the purview of their regulatory functions, such as the EPA and the State Environment Department.

Question 3

What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

Answer to Question 3

Recognizing that the process should start by engaging local, State and Tribal Government to learn what they are interested in discussing, the following framework of benefits can be discussed with local, State, and Tribal governments:

- A revenue sharing program evolving from the use of public lands, transportation and access routes, and other community initiatives are among the most optimal and extensive methods of engaging the local communities in a beneficial manner. The Department should clearly identify the financial benefits that will accrue to the host community. Understanding that the host community will ultimately negotiate with the Department, establishing a "floor" would be beneficial to permit potential communities to include the financial data in their evaluation process.
- New positions needed to design, build, manage and operate the CIS will be filled primarily by local residents
- The need for local and regional goods and services in support of the project, which is intended to be a long-lasting endeavor, will incubate business growth for many years;
 - Through large engineer, procure and construct (EPC) capital expenditures requiring significant employment and engagement of the local labor pool and businesses;
 - Research and maintenance jobs resulting from spent nuclear fuel and canister aging considerations;

- Rail car and transport cask maintenance activity; and
- When a permanent repository site has been designed and selected, the facilities needed to put the SNF going to a repository in whatever additional packaging may be appropriate, with the CISF as the “front end” for a repository feed stream.
- Provide assurance that the CISF will become the nucleus for new businesses and industries, whether related to the CISF or not.

An excellent case study of a successful campaign executed by the Department is its own Waste Isolation Pilot Plant (WIPP). WIPP is the nation's only deep geologic repository for long-lived radioactive waste. Located 26 miles southeast of Carlsbad, New Mexico, WIPP permanently isolates defense-generated transuranic (TRU) waste 2,150 feet underground in an ancient salt formation. The economic benefits of WIPP to the communities are well known and enjoyed by the communities and the State. Additionally, the safety record of WIPP operations and the transportation of radioactive material to the site provides solid evidence that a federal facility for storage of radioactive material is achievable.

Question 4

What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

Answer to Question 4

There are several impediments that stand in the way for establishing a CISF; we focus on two most formidable challenges:

1. Absence of an active government program to establish a repository; and
2. The definition of the term “consent.”

The Department faces public opposition to an interim site because opponents believe that an interim SNF storage site will become an indefinite SNF storage site. Both opponents and supporters of interim storage deserve to be assured that the Federal Government will fulfil its obligation for a repository. In a hopeful development, DOE's Acting Assistant Secretary for Nuclear Energy Andrew Griffith has recently written to Dr. Kris Singh of Holtec that “the Department will develop an overall strategy for an integrated waste management system, including provisions for ensuring the availability of permanent disposal within a reasonable timeframe”. (A copy of the letter is included as Appendix A). Concrete steps to carry out Mr. Griffith's commitment will help to provide that assurance.

Lacking a clear definition by the Department of the community, group, or population that the Department looks to for “consent”, the Department of Energy faces a monumental task in its endeavor to site a federal interim storage facility. “Casting the net too wide” in defining the jurisdictions that must “consent” will result in the inevitable failure of the siting process. ***Consent should come from the community that is willing to host the federal site.*** ELEA offers a willing group of communities that provides its consent to host the CIS to safely store spent fuel from the Nations' nuclear fleet. While DOE continues to look at other sites and perhaps other consent-based siting processes, we believe that the Department is in a position to determine that HI-STORE is an appropriate selection for a consent-based federal interim storage site.

It is the Department's responsibility to identify and address, as appropriate, adverse human health or environmental effects of a Federal interim storage facility and associated activities on minority populations and low-income populations in the vicinity of the proposed facility offered by the willing host community, and indeed on all populations in the vicinity of the facility.

Holtec, through its HI-STORE facility in New Mexico, has already made significant progress on this matter. An overwhelming majority in the affected area, as defined by NMSS, supports the HI-STORE CISF program. The Holtec / ELEA relationship has succeeded in forging the support by focusing on the following key points:

- The HI-STORE CISF will store the fuel below-the-ground in secure concrete silos designed to be invulnerable to terror or extreme environmental phenomena.
- The fuel will be stored in readily transportable canisters that are recognized by regulatory authorities around the world, including the NRC, to be leak-tight under all conceivable accidents. Thus, the fuel can be removed from the site without any difficulty.
- The risk of a radiological accident at the HI-STORE CISF resulting in a discernible release of radioactivity to the surrounding community is small.
- The local communities will benefit from the HI-STORE CISF through new job opportunities, and improved infrastructure and education of the young.

Our message, delivered through credible spokespersons, has resonated in the proposed host communities and has resulted in substantial support. We invite the federal government to take advantage of the progress already established over the course of the last decade in the development of a HI-STORE CISF to provide a robust pathway to successfully initiate and execute the federal interim storage program.

Question 5

How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

Answer to Question 5

The duration of storage of spent fuel at federal interim storage facilities will be driven by the availability of a federal repository or another federal program for final disposition of spent fuel.

There is no question that the USG has diminished credibility with the public, having failed to honor the requirements of the Nuclear Waste Policy Act to begin removing fuel in 1998 and then failing to continue the Yucca Repository program. To overcome this deficit, the DOE should take the following bold steps:

- Make an irrevocable commitment to the nation that a repository will be operational by a feasible date, say 2060, and agree to give the host community of the federal interim storage facility, in the case of non-performance, the right to seek reparations for failing to meet these requirements.
- Document this commitment in a Presidential Executive Order and in federal legislation as evidence of national resolve to provide a permanent solution.

Dry cask storage systems have been used at U.S. nuclear power plants for four decades with an excellent safety record: the nuclear industry can rightfully claim an impeccable record of safety. Part of the reason for that success is the robust design of the dry storage systems. Another reason is proper care and maintenance, including implementation of aging management programs (AMPs) required by the NRC.

The NRC's Continued Storage Rule (formerly Waste Confidence Rule) expresses the Commission's confidence that the fuel can be stored safely in dry storage systems for at least 120 years. The Department needs to educate the local communities on the safety record of the dry storage industry, the robustness of the system designs, the security offered by the robust systems, and the overall ability of the dry storage systems to perform their intended functions until such time as the Department fulfills its obligation under the NWPA for final disposition of the spent fuel.

Question 6

What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

Answer to Question 6

DOE should partner with organizations that have evinced a strong commitment to the CIS program. In the case of the HI-STORE CISF, ELEA, the consortium of four local governments in Southeast New Mexico invited Holtec, the nation's most prominent designer and provider of state-of-art storage systems, to provide a compelling CISF solution. From the very beginning, the HI-STORE CISF has enjoyed overwhelming local community support and a majority support throughout the State. The then-governor of New Mexico, Susana Martinez, wrote a strong letter of support of HI-STORE CISF to the then DOE-Secretary Moniz (a copy of the letter is included as Appendix B). A recent letter to the now-governor of New Mexico Lujan Grisham submitted by the City of Carlsbad Mayor Janway, City of Hobbs Mayor Sam Cobb, Eddy County Chairman Steven McCutcheon, and Lea County Commissioner Jonathan Sena demonstrates that the local communities "remain resolute in their support for the Holtec interim storage facility" (a copy of the letter is included as Appendix C). Relying on this local commitment and support and on DOE's continuing obligation to provide permanent disposal for the nation's SNF (confirmed by an unbroken line of judicial decisions), Holtec has invested over \$80 million dollars of its own money on the HI-STORE CISF program.

In light of the above, the Holtec / ELEA organization is a suitable structure for the Department to establish a consent-based site in southeast New Mexico where ELEA and Holtec have worked since 2016 to earn public acceptance.

The HI-STORE Consolidated Interim Storage Facility provides an unprecedented opportunity to the Department to make good on the government's long-standing promise to permanently dispose of this nation's commercial SNF. ELEA offers a willing group of communities that provides its consent to host the CIS to safely store spent fuel from the Nations' nuclear fleet.

The HI-STORE Consolidated Interim Storage Facility uses the latest dry storage technology, embodied in Holtec's HI-STORM UMAX system, and holds the fuel in subterranean impregnable silos which emit virtually zero radiation dose and essentially preclude the risk of harm from terrorism.

The Department developing a partnership with the Holtec / ELEA organization will help the Department fulfill its obligation to the industry and the Nation. The federal government's unfulfilled obligation to permanently dispose of the nation's SNF inventory stored at the existing nuclear plants, will vanish if the Department, working with Holtec / ELEA begins to fulfil its obligation under the NWPA for final disposition of the spent fuel.

Question 7

What other issues, including those raised in the Draft Consent-Based Siting Process, should the Department consider in implementing a consent-based siting process?

Answer to Question 7

We consider the following factors to be essential parameters that will help structure a successful consolidated interim storage program:

- Engagement with a qualified entity, henceforth referred to as Private Initiative (PI), that has consistently demonstrated success in the engineering, procurement, and design (EPC) and the operations and maintenance (O&M) of used fuel storage facilities.
- Engagement with a PI having sufficient resources and financial investment in and commitment to the project to embody the principles of consent-based siting and obviate the challenges of local opposition.
- Engage with a PI that fulfills the following criteria:
 - Supports policies and regulatory actions that advance the use of clean, reliable, and affordable carbon-free nuclear energy to protect the health, environment, and economic well-being of disadvantaged communities.
 - Integrates environmental justice considerations in PI Project Plans so as to meet the laws, regulations, and policies that protect public health, safety, and the environment.
 - Integrate environmental justice considerations into PI business practices, including those related to selection of contractors and suppliers.
 - Maintains a solid governance program that prevents discrimination of minorities in their hiring and promotion practices.
 - Maintains a Learning Management System to inculcate a deep understanding of Environmental Justice considerations in their workforce.
 - Secures input from disadvantaged communities in the affected areas around a project facility to identify and address environmental justice issues.
 - Maintains an effective outreach to disadvantaged communities to enable meaningful participation by the affected citizens.
- Implementation of a Department-PI business model (such as a Public Private Partnership) that incentivizes and provides accountability for performance while providing sufficient capitalization and operational resources, and support.
- Selection of a site that does not have a disqualifying safety, environmental or licensing flaw (seismic, tornado, flooding, soil stability, emergency planning, etc.) to preclude impacts and complications in EPC, licensing, and stakeholder relations.
- Ensure that the CISF is robust and capable of unquestionably protecting public health and safety for severe design basis external man-induced events (10 CFR 72.94) or radiological sabotage and terrorism.
- Ensure that the necessary transportation access to the site can be built without significant physical or legal impediments.
- Make sure that the population density near and around site is low.
- Beyond the CISF siting process, we encourage the Department to consider engaging a private entity as an agent to prepare for and to conduct the transportation campaigns to move the spent fuel to the CIS. The use of an experienced private entity will accelerate the shipping process by capitalizing on the experienced shipper rather than the Department developing this program. A company such as Edlow International has decades of experience determining transportation routes, engaging with the Federal, state, and local agencies, coordination with other partners, stakeholders, and the public, etc.

3.0 Removing Barriers to Meaningful Participation

Question 1

What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

Answer to Question 1

It is clear from past public engagement meetings that one of the greatest impediments to meaningful participation by the citizenry is the prevalence of a highly polarized discussion between pro- and anti-nuclear advocacy groups, both of whom will commandeer the conversation to address their individual concerns that are only sometimes related to the matter at hand, as well as to respond to previous dissenting commenters in their own defense. These discussions are not meaningful and provide no recourse for resolution for either side. For the most part, they only serve to cause further division and serve as a public platform to spread misinformation.

While it is important for inclusivity's sake that all voices be heard, effective measures can be taken to avoid this continuous conversational stalemate. The best way to accomplish this is to include a moderator for these discussions so that the speech remains relevant to the topic. The moderator should also be responsible to keep each speaker to their allotted time and to only speak one time. This moderator should not simply be a designated DOE employee but an individual specifically hired for this task with experience moderating discussions among emotionally charged speakers. This will allow the Department to focus their narrative in attempting to build a safe and ethical nuclear future in the United States.

Question 2

What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

Answer to Question 2

The Government should educate elected officials from each state on the federal facility development plan and ensure that each state has a vested interest to ensure that communities, including underserved communities, have the information needed so that they can evaluate the pros, cons, risks, and rewards of becoming a host community.

The Government should publicly lay out its federal facility development plan through blogs, public meetings, and similar communication methods. All steps in the engagement process must be transparent and devoid of political influence to the extent possible.

The Government must consider that underserved communities may not have access to electronic media and thus must provide information to these communities in a manner that is commensurate with the technology in the community. Reiterating that elected officials must have a vested interest in ensuring that their respective constituency has been afforded the opportunity to receive the Department's information.

Holtec / ELEA provide additional methods for community outreach in its response to Questions 1, 2, 3, & 5 in this Section and in Question 1 of Section 4.0.

Question 3

How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

Answer to Question 3

Following self-identification of willing host communities, the Department should establish an engagement panel with each such community. An objective of the engagement panel(s) is to provide an open and transparent dialogue with the potential host community with respect to scientific facts on spent fuel storage and transportation.

Another objective of the panel is to enhance and foster open communication, public involvement, and education on spent fuel storage and transportation. To foster an open discussion based on facts and science, the Department should invite nuclear industry experts to present on pertinent topics at each meeting. Please see the response to Question 1 in this Section for recommendations on how to facilitate a public meeting where participants are encouraged to speak.

We further recommend benchmarking the programs for spent fuel storage and disposal in other countries such as Canada, Finland, France, Sweden, Switzerland, and the United Kingdom to identify best practices adopted by other countries that would benefit the Department and the U.S.

Question 4

How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

Answer to Questions 4

Please see responses to Questions 1, 2, 3, and 5 in this Section.

Question 5

What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Answer to Questions 5

Access to scientifically reliable and readily interpretable information is paramount in achieving the consent of a community. Information that the public can understand on the effects a CISF will have on their community, the technology used to safely store spent nuclear fuel, as well as the dose information to address any health concerns the public might have. This information must be readily available to the public.

The correct information alone on the government's website may not be fully effective because of a distinct lack of trust on the public's part. Many communities feel wronged by the nuclear mistakes of the past and the federal government's response to them. Until the federal government makes a show of good faith that addresses verified mistakes such as by committing to pay reparations, it will never be able to repair the trust of its under-represented citizens, a requirement necessary to truly fulfill the intention of a consent-based site.

We suggest that the Department contract with a respected Think Tank such as the Atlantic Council, to serve as the disseminator of information in a form and format that resonates with the local communities.

4.0 Interim Storage as Part of a Waste Management System

Question 1

How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

Answer to Question 1

As discussed in Question 1 in Section 1, Environmental Justice is a tool, within the normal NEPA context, to identify communities that might otherwise be overlooked and identify impacts due to their uniqueness. As with all Federal actions, NEPA requires Federal agencies to take a “hard look” at the environmental impacts of major Federal actions significantly affecting the quality of the human environment. Therefore, part of the Department’s mission should be to identify and address, as appropriate, disproportionately high, and adverse human health or environmental effects of a Federal interim storage facility and associated activities on minority populations and low-income populations in the vicinity of the proposed facility.

The environmental consequences from the development of the nation’s waste management system should not disproportionately affect any single group of people. To balance the inevitable effects—both negative and positive—of the project’s development, the Department needs to proactively reach out to historically under-represented communities. While hosting public meetings in town halls will be necessary to promote open communication with communities, it is unlikely that such events will be sufficient. DOE must make its communication effort as comprehensive as possible on the community level not only through conversations in the government-owned halls of cities but in both public and private schools, churches, and tailored social events.

Question 2

What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

Answer to Question 2

Co-locating multiple waste facilities in an area such as the HI-STORE CIS located within 10 miles of the operating WIPP facility is a sound idea because it would help develop a skilled and diversified workforce in the region.

As stated in their letter to Governor Lujan Grisham [Appendix C], “we in southeastern New Mexico, suffer with the ups and downs of the oil industry, and this safe, secure storage facility will provide some 350 jobs as well as a \$3 billion capital investment in our area. While the Oil & Gas industry is very robust now, it is inevitable that with the number of electric vehicles on the road becoming larger and larger, the O&G industry will become smaller and smaller.” Building manufacturing and R&D facilities in the area will create jobs for the existing people in the area as envisioned by the leadership of Carlsbad and Hobbs as well as Lea and Eddy Counties.

Question 3

To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

Answer to Question 3

Our experience in New Mexico indicates that people’s views on the CISF are inevitably linked to the people’s belief that the Government is serious about meeting its permanent disposal obligations. The Department would make the challenge of developing a CISF far easier by making progress on the repository issue. Please see the letter from Holtec and ELEA executives to DOE Secretary Granholm on this matter, dated September 21, 2021 (a copy of the letter is included as Appendix D).

Progress towards a permanent repository is inherent in the obligations already imposed on DOE by the Nuclear Waste Policy Act. The benefits of centralized interim storage exist independent of progress towards

a permanent repository. Deferring those benefits because DOE has been unable in the last dozen years to make progress towards a permanent repository may be politically expedient; However, it is otherwise irrational. Those benefits include the following:

- Allowing the completion of decommissioning of those nuclear plant sites that are now host only to an ISFSI.
- Reducing the amount of SNF in storage at sites with greater population density and in closer proximity to major water bodies (oceans, lakes, and rivers).
- Improving the security of SNF storage with the use of subterranean storage technology, such as HI-STORM UMAX, proposed for the HI-STORE CISF.
- Reduced interim storage costs on an industry-wide basis as a result of the economic efficiency of centralized storage.

Question 4

What other issues should the Department consider in developing a waste management system?

Answer to Question 4

Inaction is not an option. The substantial funds being paid from the Judgement Fund in compensation for DOE's breach of its obligation to dispose of SNF can be directed to supporting a CISF that would markedly improve the security profile of the nation's used fuel storage systems spread all over the country.

In 2012, the Obama / Biden administration convened the Blue-Ribbon Commission (BRC) on America's Nuclear Future. After almost two years of hearings throughout the United States, (including one meeting in Carlsbad to visit the DOE WIPP facility, the only licensed deep repository in the U.S. for defense transuranic waste disposal) the Obama administration came to a number of conclusions related to solving the problems of the "back-end" of the fuel cycle. Recognizing that a deep geological repository for HLW and SNF was already mandated in law, and the BRC concluded that one or more repositories would be needed. In addition, the BRC concluded that an integrated waste management system would benefit greatly from the construction of one or more "Consolidated Interim Storage Facilities" in the country. The BRC's rationale was that "developing consolidated storage capacity would allow the federal government to begin the orderly transfer of spent fuel from reactor sites to safe and secure centralized facilities independent of the schedule for operating a permanent repository.

The arguments in favor of consolidated storage are strongest for "stranded" spent fuel from shutdown plant sites. Looking beyond the issue of today's stranded fuel, the availability of consolidated storage will provide valuable flexibility in the nuclear waste management system that could achieve meaningful cost savings for both ratepayers and taxpayers when a significant number of plants are shut down in the future, can provide back-up storage in the event that spent fuel needs to be moved quickly from a reactor site, and would provide an excellent platform for ongoing R&D to better understand how the storage systems currently in use at both commercial and DOE sites perform over time. Obviously, the challenge for a CISF politically, in the absence of a repository, is the pushback by those opposing anything nuclear for fear a CISF will become a de facto permanent storage facility since there is no effort to site and build a deep geologic repository at this time by DOE.

There are 75 SNF storage sites at various utility sites in 35 states. The utilities and communities associated with the carbon free energy generation facilities had never expected to be long term SNF storage facilities. The 1982 NWPA created "standard contracts" with the utilities for DOE to take title to the utility's SNF and move it to a deep geologic repository starting by 1998. It is now more than two decades past the deadline

for DOE to have a repository for disposal of the SNF. Every nuclear utility has sued for breach of contract and compensation has won or settled their suit. Every taxpayer is presently paying into the government settlement fund to pay the utilities for their storage costs of some \$800 million annually. And, that liability is growing as more plants are decommissioned. An interim storage facility is a much more economically efficient way to store and manage the fuel as it cools in preparation for the repository. Educating Congress on the financial impact to the taxpayer by inaction and potential savings to the taxpayer by action will assist in accelerating movement in Congress.

We strongly believe the Department can bring the affected Governors and Congressional delegations together to create a strong movement in Congress and the Department to solve the repository problem. We urge you to reactivate the process to choose a repository location, either by implementing current law or by formally setting aside Yucca Mountain, as selected by the Nuclear Waste Policy Act's mechanisms, and approved by the Congress when it rejected the State of Nevada's veto by an overwhelmingly bipartisan vote. This is a critical infrastructure project if we are to get to 100% carbon free electricity generation in our country, which as we all know, will take base load, carbon free nuclear power to achieve the goal.

Appendix A

Letter from DOE's Acting Assistant Secretary for Nuclear Energy Andrew Griffith to
Dr. Kris Singh of Holtec, dated January 31, 2022

January 31, 2022

Dr. Kris P. Singh
President & CEO
KPS Technology Campus
Holtec International
1 Holtec Boulevard
Camden, New Jersey 08104

Dear Dr. Singh:

Thank you for your September 21, 2021, letter to Secretary Granholm supporting forward movement on a national repository for spent nuclear fuel (SNF) and high-level radioactive waste (HLW) disposal. I'm responding on behalf of Secretary Granholm.

The Department of Energy (DOE) is committed to ensuring that SNF and HLW are disposed of safely, in accordance with all applicable legal requirements, and in a manner that protects human health and the environment. Congress provided funds to the Department in fiscal year 2021 for interim storage activities and requested that the Department move forward under existing authority to identify sites for Federal interim storage facilities using a consent-based process. Secretary Granholm has endorsed this approach and further directed that consideration of social equity and environmental justice be included in the process.

Although DOE is focusing its near-term efforts on interim storage, we recognize that gaining support for any interim storage facility is highly dependent on having a strategy in place for permanent waste disposal. Therefore, as DOE moves forward with a consent-based siting process for Federal interim storage facilities, the Department will develop an overall strategy for an integrated waste management system, including provisions for ensuring the availability of permanent disposal within a reasonable timeframe.

The Department issued a request for information (RFI) on December 1, 2021, seeking public input on issues related to siting Federal interim storage facilities for SNF using a consent-based process. DOE will use responses to this RFI to inform development of a consent-based siting process, an overall strategy for an integrated waste management system, and potential action to encourage public engagement. We welcome participation and feedback from Holtec and the Eddy-Lea Energy Alliance in this process.

I look forward to working with you to solve this complex problem. If you have any questions, please feel free to contact me or Ms. Aimee Witteman, Deputy Assistant Secretary for Intergovernmental Affairs, Office of Congressional Affairs at (202) 586-5450.

Sincerely,

A handwritten signature in black ink, appearing to read 'Andrew Griffith', with a long horizontal flourish extending to the right.

Andrew Griffith
Acting Assistant Secretary
for Nuclear Energy

cc: Ms. Michelle Lujan Grisham, Governor
Mr. Ben Ray Lujan, US Senator
Ms. Yvette Herrell, Member of Congress
Mr. Martin Heinrich, US Senator
Ms. Melanie A. Stansbury, Member of Congress
Christopher Hanson, Chairman, NRC
Jeff Baran, Commissioner, NRC
David Wright, Commissioner, NRC
Margaret Doane, EDO, NRC
Senator Tom Carper, Chairman, Envir.
Congressman Frank Pallone, Chairman, Energy
Maria Korsnick, President, NEI
Doug True, CNO, NEI
Jack Edlow, President, Edlow International
Pierre Oneid, CNO, Holtec International
Ed Mayer, Director, HI-STORE LLC
Joy Russell, CCO, Holtec International
Joseph Delmar, Holtec International

Appendix B

Letter from New Mexico Governor Susana Martinez to Secretary of Energy Moniz,
Dated April 10, 2015



State of New Mexico

Susana Martinez
Governor

April 10, 2015

Dr. Ernest Moniz, Secretary
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

Dear Secretary Moniz,

This letter is to inform you of my support of the community leaders who continue to spearhead the effort to bring a consolidated interim storage facility for spent fuel to southeastern New Mexico.

The recent decision by your administration to adopt a consent-based approach for waste management should highlight areas such as southeastern New Mexico where there is broad support in the region for such an endeavor. The Eddy-Lea Energy Alliance (ELEA) is an organization with regional participation by the City of Carlsbad, City of Hobbs, Eddy County and Lea County. As you are aware, the residents of this area have a high level of understanding of the nuclear industry and its importance to our national security. There is a strong pre-existing scientific and nuclear operations workforce in the area, and the dry, remote region is well-suited for an interim storage site. ELEA has already selected a location that has been vetted extensively.

There is a significant and growing national need for such an interim storage facility. Millions of taxpayer dollars are currently being spent on monitoring and oversight of spent fuel each year, and millions more are being spent on settlement payments related to waste disposition. In many instances, these actions are taking place where such activity and the presence of such waste is disagreeable to local communities.

These communities in New Mexico support safely moving spent fuel to a consolidated interim storage site using proven technology which is the most sensible approach to this problem until a permanent and long-term solution is available. Dry cask storage is a proven, passive, and safe system that has been used since 1984 with no adverse incidents.

Dr. Ernest Moniz
ELEA Interim Storage

Time and time again, the citizens of southeastern New Mexico have impressed me with their hard work ethic and willingness to tackle national problems that many others consider to be unsolvable. In one of the most remote areas of state, they have had the ingenuity and fortitude to carve out a niche in the nuclear industry to broaden their economic base. They understand the benefits not only to their local economy, but also to our country.

Therefore, I support the ELEA and its member cities and counties in their effort to establish a consolidated interim storage facility in southeastern New Mexico that will be regulated by the high safety and technical standards of the Nuclear Regulatory Commission.

Sincerely,

A handwritten signature in black ink, appearing to read 'Susana Martinez', with a stylized, cursive script.

Susana Martinez
Governor

Appendix C

Letter to New Mexico Governor Lujan Grisham submitted by the City of Carlsbad Mayor Janway, City of Hobbs Mayor Sam Cobb, Eddy County Chairman Steven McCutheon, and Lea County Commissioner Jonathan Sena

The Office of Governor Michelle Lujan Grisham
490 Old Santa Fe Trail Room 400
Santa Fe, NM 87501

Honorable Governor Lujan Grisham:

We, the undersigned, are writing you to urge you to NOT put the Steinborn Bill on your call for the upcoming session of the legislature. Carlsbad and Hobbs as well as Lea and Eddy Counties remain resolute in their support for the Holtec interim storage facility because of the safety and security of the project. There are some 75 of these smaller facilities at carbon free power plants across the country that have been in place for more than 30 years providing safe and secure storage without a single incident. In the absence of a disposal repository at this time, temporary, safe, secure Consolidated Interim Storage is required as a critical step in the final disposal process as recommended by President Obama's Blue-Ribbon Commission. Governor, nuclear power is carbon free base-load energy and a clear requirement in any strategy to meet a 100% clean energy goal. This bill, if passed, may very well have serious negative unintended consequences for our national labs as well as your clean energy goal for the state.

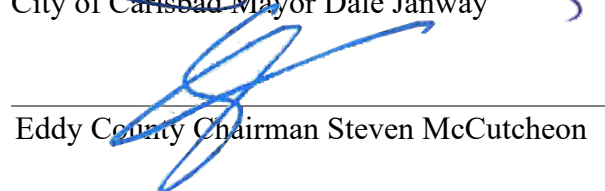
Furthermore, as you well know, we in southeastern New Mexico, suffer with the ups and downs of the oil industry, and this safe, secure storage facility will provide some 350 jobs as well as a \$3 billion capital investment in our area. While the Oil & Gas industry is very robust now, it is inevitable that with the number of electric vehicles on the road becoming larger and larger, the O&G industry will become smaller and smaller.

We have been trying to meet with you to discuss a number of state oversight and transparency provisions as well as financial assurance standards for clean-up. We would like to meet with you after the session to solidify these as well as other state requirements for oversight. Again, Governor, we ask you to NOT place Steinborn's bill on your call.


Best regards,



City of Carlsbad Mayor Dale Janway



Eddy County Chairman Steven McCutcheon



City of Hobbs Mayor Sam Cobb



Lea County Commissioner Jonathan Sena

Appendix D

Letter to Secretary of Energy Granholm from Dr. Kris Singh, President & CEO, Holtec International and Mr. John Heaton, Chairman, Eddy Lea Energy Alliance, RE: Development of a Deep Geologic Repository for High Level Waste and Spent Nuclear Fuel
Dated September 21, 2021



KPS Technology Campus
1 Holtec Blvd., Camden, NJ 08104
(856) 797-0900
www.holtecinternational.com



Eddy Lea Energy Alliance
101 N. Halagueno., Carlsbad, NM 88221
(575) 302-6358
www.eddyleaenergyalliance.com

September 21, 2021

Ms. Jennifer Granholm, Secretary of Energy
US Department of Energy
1000 Independence Avenue SW
Washington, DC 20585

Re: Development of a Deep Geologic Repository for High Level Waste and Spent Nuclear Fuel

Honorable Secretary Granholm:

We commend the spirit behind the joint letter from Governor Grisham, Senator Heinrich, Senator Lujan, and Representative Stansbury to you for calling attention to the topic of a national repository for High Level Waste (HLW) and Spent Nuclear Fuel (SNF). We hope their letter prompts a national conversation on a matter of national security, to which please accept this letter as our humble contribution.

The parties to this letter are the Eddy-Lea Energy Alliance (ELEA) and Holtec International. ELEA is made up of the southeastern New Mexico cities of Carlsbad and Hobbs and the counties of Eddy and Lea who have a joint powers agreement between themselves and own some 1,000 acres between Carlsbad and Hobbs. Holtec International, a major leader in HLW/SNF storage in the world, is seeking a Consolidated Interim Storage Facility (CISF) license to store SNF at the ELEA site (at which time Holtec may exercise an option agreement with ELEA to purchase the land, build and operate the facility).

In 2012, the Obama/Biden administration convened the Blue-Ribbon Commission (BRC) on America's Nuclear Future. After almost two years of hearings throughout the United States, (including one meeting in Carlsbad to visit the DOE WIPP facility, the only licensed deep repository in the U.S. for defense transuranic waste disposal) the Obama administration came to a number of conclusions related to solving the problems of the "back-end" of the fuel cycle. Recognizing that a deep geological repository for HLW and SNF was already mandated in law, and the BRC concluded that one or more repositories would be needed. In addition, the BRC concluded that an integrated waste management system would benefit greatly from the construction of one or more "Consolidated Interim Storage Facilities" in the country. The BRC's rationale was that "developing consolidated storage capacity would allow the federal government to begin the orderly transfer of spent fuel from reactor sites to safe and secure centralized facilities independent of the schedule for operating a permanent repository.

The arguments in favor of consolidated storage are strongest for "stranded" spent fuel from shutdown plant sites. Looking beyond the issue of today's stranded fuel, the availability of consolidated storage will provide valuable flexibility in the nuclear waste management system that could achieve meaningful cost savings for both ratepayers and taxpayers when a significant number of plants are shut down in the future, can provide back-up storage in the event that spent fuel needs to be moved quickly from a reactor site, and would provide an excellent platform for ongoing R&D to better understand how the storage systems currently in use at both commercial and DOE sites



perform over time.”. Obviously, the challenge for a CISF politically, in the absence of a repository, is the pushback by those opposing anything nuclear for fear a CISF will become a de facto permanent storage facility since there is no effort to site and build a deep geologic repository at this time by DOE.

There are 75 SNF storage sites at various utility sites in 35 states. The utilities and communities associated with the carbon free energy generation facilities had never expected to be long term storage facilities. The 1982 NWPA created “standard contracts” with the utilities for DOE to take title to the utility’s SNF and move it to a deep geologic repository by 1998. It is now more than two decades past the deadline for DOE to have a repository for disposal of the SNF. Every utility that has sued for breach of contract and compensation has won their suit. Every taxpayer is presently paying into the government settlement fund to pay the utilities for their storage costs of some \$800 million annually. And, that liability is growing as more plants are decommissioned. A CISF is a much more economically efficient way to store and manage the fuel as it cools in preparation for the repository.

We strongly believe with your sophisticated political acumen and leadership you can bring the affected state governors and Congressional delegations together to create a strong movement in Congress and your department to solve the repository problem. Both Holtec and ELEA implore you to begin the search for a repository location. This is a critical infrastructure project if we are to get to 100% carbon free electricity generation in our country, which as we all know, will take base load, carbon free nuclear power to achieve the goal.

We hope you will agree to meet with us to further discuss solving the back-end of the nuclear fuel cycle issues, which are critical to the development of more carbon free nuclear power.

Sincerely,

Dr. Kris Singh, President & CEO
HOLTEC INTERNATIONAL

Mr. John Heaton, Chairman
ELEA Alliance

cc: Ms. Michelle Lujan Grisham, Governor
Mr. Ben Ray Lujan, US Senator
Ms. Yvette Herrell, Member of Congress

Mr. Martin Heinrich, US Senator
Ms. Melanie A. Stansbury, Member of Congress

cc

Christopher Hanson, Chairman, NRC
Jeff Baran, Commissioner, NRC
David Wright, Commissioner, NRC
Margaret Doane, EDO, NRC
Senator Tom Carper, Chairman, Envir.

Congressman Frank Pallone, Chairman, Energy
Dr. Kathryn Huff, Asst. Sec., DOE
Maria Korsnick, President, NEI
Doug True, CNO, NEI
Jack Edlow, President, Edlow International

Pierre Oneid, CNO, Holtec International
Ed Mayer, Director, HI-STORE LLC
Joy Russell, CCO, Holtec International
Joseph Delmar, Holtec International

Attachments: Biography of Dr. Krishna P. Singh
Biography of Mr. John Heaton

BIOGRAPHICAL PROFILE

Dr. Krishna P. Singh
k.singh@holtec.com

Dr. Kris Singh is the Founder, President and CEO of Holtec International, headquartered in Jupiter, Florida which he established in 1986 and nurtured its steady rise into a multi-national company with its business footprint in 18 countries on five continents. He is also a Professor at the University of South Florida's Institute for Advanced Discovery and Innovation where he collaborates with the USF faculty in applied energy technology research.



Dr. Singh received his Ph.D. in Mechanical Engineering from the University of Pennsylvania, Philadelphia (1972), a Master of Science in Engineering Mechanics also from Penn (1969), and a Bachelor of Science in Mechanical Engineering from BIT Sindri (Ranchi University), India (1967). Dr. Singh was elected to the National Academy of Engineering in 2013 for his seminal impact in the energy sector of mechanical engineering. He received Edison Foundation's "Thomas Alva Edison Award" in 2015 for his ecologically and environmentally impactful inventions. Rutgers University named him "South Jersey an of the year – 2016" for his significant beneficial impact on the South Jersey region. In 2015, he received the George Washington medal from the Engineer's Club of Philadelphia. In 2017, the National Academy of Inventors elected him a Fellow and the University City Science Center (Philadelphia) inducted him into its "Walk of Fame." The *Pan American Academy of Engineering*, the Americas' institution of leading engineering thought leaders, elected Dr. Singh to its Academy in 2020. In 2019, he was elected to the Academy of Science, Engineering and Medicine of Florida. He was named a Fellow of the American Society of Mechanical Engineers in 1987 for his numerous contributions to heat exchange technologies. He is an overseer at the University of California, Berkeley, and a senior fellow in Mechanical Engineering at the University of Pennsylvania. He is a registered Professional Engineer in Pennsylvania and Michigan and a member of the American Nuclear Society.

A widely published author in scientific journals (74 technical papers, one textbook and numerous symposia volumes) and a prolific inventor (135 patents granted, many pending), Dr. Singh has led Holtec International since the company's inception, building it into a technological powerhouse globally respected for its engineered goods and services with nine major operations centers on five continents. Over 140 nuclear plants around the world employ Holtec's systems and equipment, many based on Dr. Singh's patents. Thanks to the steady stream of design innovations, Holtec is widely held to be globally pre-eminent in the management of used nuclear fuel.

Several national and international codes and standards on pressure vessels and heat exchangers bear the imprint of his applied research. In recent years, Dr. Singh has been leading Holtec in the global race to develop a "walk away safe" small modular reactor to make nuclear energy a cost-competitive clean energy solution for a world struggling with rising carbon emissions. Under Dr. Singh's leadership, Holtec is in the vanguard of emerging field and challenges such as cloud-based information management of all Company operations, development of cutting-edge manufacturing processes & machines, devising innovative technologies to decarbonize global economies, and applying Holtec's patented below-ground interim storage technology to solve America's used nuclear fuel conundrum.

He is also a passionate sponsor of expedited regulatory acceptance, construction, and commissioning of the Company's transformative, "walk away safe" small modular reactor, SMR-160 which has been in development for over a decade and has been substantially self-funded by the Company.

Ensuring an environmentally safe decommissioning of nuclear units after their shutdown using the Holtec's Decommissioning Management Model which has been instrumental in enhancing the safety of the Company's fleet of shuttered plants is of a piece with Dr. Singh's *modus operandi* to push the technology envelope in every industrial sector where Holtec operates. His latest bold move is to save the retiring coal fired plants from demolition by converting them into energy storage and clean power delivery plants using Holtec's patented "green boiler technology."

An intrepid entrepreneur and a socially conscious industrialist, Dr. Singh built a \$310 million Technology Campus on the Delaware River in Camden, NJ in 2017 to create much needed employment in one of America's poorest cities.

BIOGRAPHICAL PROFILE

Dr. Krishna P. Singh
k.singh@holtec.com

Dr. Singh is currently an Emeritus member of the University of Pennsylvania's Board of Trustees, where he served from 2009-2017, and an active member of the Penn's Board of Overseers for the School of Engineering and Applied Science. In addition, he serves on the Board of the Nuclear Energy Institute (1998-present), the *Atlantic Council*, a Washington, DC-based think tank, the "National Investment Council" of Ukraine and the Cooper Health System, Camden, NJ. He chairs the KPS Foundation, a charitable Singh family foundation whose signature contribution to the advancement of science is the completion of the "Krishna P. Singh Center for Nanotechnology" at the University of Pennsylvania in Philadelphia in 2013. The KPS Foundation is also active in improving child literacy and public health in developing countries.



John A. Heaton

John Heaton is the volunteer energy coordinator for the City of Carlsbad where he serves as the Chair of the Mayor's Nuclear Task Force. He is also an appointed member of the board of the Eddy-Lea Energy Alliance and Chairs the Board of CEHMM and the NM Mining Commission. Prior to these appointments, he was elected to the New Mexico House of Representatives where he served on the interim Radioactive and Hazardous Waste and Pension & Investment Oversight Committees. At the national level, he was chairman of the NCSL Energy committee, where he chaired the Environmental Management oversight sub-committee and the High-Level Waste Working Group. He is married to Julia and has two adult children.

From: Jonna Lou Schafer
Sent: Thursday, March 3, 2022 8:07 PM
To: Consent Based Siting
CC: Yvette Herrell; Doug Levine; Couy Griffin; Gerald Matherly; Vickie Marquardt; R B Nichols
Subject: [EXTERNAL] RFI: Consent-Based Siting
Attachments: PLUAC---Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities.docx

Please find attached comments submitted by the Otero County, New Mexico Public Land Use Advisory Council regarding the Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities.
Thank you.

Gary Scarbrough
Chairman of the Public Land Use Advisory Council

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March 3, 2022

Office of Spent Fuel and Waste Disposition
Office of Nuclear Energy
Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

RE: Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities.
Sent via email to consentbasedsiting@hq.doe.gov

Greetings,

My name is Gary Scarbrough and I am writing on behalf of the Otero County, New Mexico Public Land Use Advisory Council (PLUAC) in regards to the Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities published in the Federal Register on Wednesday, December 1, 2021.

In 2017, this came to the forefront and was a hot button issue throughout Otero County, New Mexico. The opponents far outweighed the proponents for the storage of nuclear waste, temporary or otherwise. PLUAC believes that is still the case today and much opposition will be launched should the Department of Energy (DOE) choose Otero County as one of its “consent based sitings.”

Article II, Section E of the Otero County Ordinance Code states that; *“The PLUAC shall have a mission of fact finding in nature relevant to the natural resources within Otero County and all matters relating thereto and shall make reports/recommendations to the Board of County Commissioners from time to time.”*

PLUAC believes that should the DOE choose Otero County as a place to store nuclear waste, even if such storage site/s/ are located on private or state land, the storage and/or transport of nuclear waste has the distinct possibility to negatively affect the natural resources within the county. Being that Otero County is comprised of approximately 67% of public land, transport of nuclear waste will likely occur across public lands. There is a great potential for unintended consequences.

Otero County has a current Otero County Comprehensive Plan (OCCP) in place which specifies the key issues and desired future conditions for the county as a whole. The OCCP also recognizes federal law that requires the federal government agencies to notify and coordinate with the affected counties local government when such agencies propose actions within the counties boundaries. One of the recognized laws in the Comprehensive Plan is the Federal Land Policy and Management Act (FLPMA) passed in 1976 and it delineates the responsibilities of the federal agencies in regards to local coordination. It is imperative that the DOE make fully aware and work in coordination with the Board of Otero County Commissioners and/or their appointed representative(s) on any issue affecting Otero County, New Mexico. As a practical matter, it makes good sense for the necessary and distinct governing bodies to negotiate early in the

planning process for the purpose of resolving conflicts and achieving consistency between plans and goals. It is simply good governance.

Thank you for the opportunity to comment.

Sincerely,
/s/Gary Scarbrough
Chairman of the Public Land Use Advisory Council

A black rectangular redaction box covering the signature of Gary Scarbrough.

cc: Board of Otero County Commissioners
Representative Yvette Herrell

From: HELEN SCHIETINGER

Sent: Monday, February 14, 2022 7:02 AM

To: Consent Based Siting

CC: Helen Schietinger

Subject: [EXTERNAL] Public comment on "Consent-Based Siting" of Federal "Consolidated Interim Storage Facilities"

To the Department of Energy,

Nuclear power should be phased out and abolished, so that no more highly radioactive waste will be generated. We need to stop making it in the first place. However for highly radioactive irradiated nuclear fuel (INF) that already exists, hardened on-site storage (HOSS), or hardened near-site storage, is the best interim measure, not CISFs. HOSS, or hardened near-site storage, is the preferred interim alternative, not CISFs. The proposed interim plan is not just ill-advised; it's foolhardy and contrary to the mission of the Department of Energy.

Sincerely,

Helen Schietinger

[REDACTED]

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From: Justin Schott
Sent: Wednesday, February 16, 2022 4:19 PM
To: Consent Based Siting
Subject: [EXTERNAL] public comment - consent-based siting RFI

Hi Consent-Based Siting Team,

Thank you for your thoughtful work on this and seeking public comment.

I serve as Project Manager for the Energy Equity Project, based at University of Michigan's School for Environment and Sustainability. I have worked on environmental justice issues in Detroit and now nationally for about 15 years and bring that lens and the hundreds of conversations I have had with impacted residents and EJ leaders to the feedback I'm submitting.

Feedback:

I don't see considerations of consent for the communities that nuclear waste will be transported through. Accidents during transport are likely to pose a greater risk than the storage itself, and there needs to be consent for the routes the waste travels to its ultimate destination.

Given the history of siting an array of waste facilities without consent and against the will of marginalized communities and Tribes, I think the default assumption should be that already overburdened communities, perhaps as identified by EJScreen or future CEJST, do not want additional siting. Even approaching communities that have historically been used as dumping grounds or sacrifice zones and asking them consider siting new nuclear waste repositories is going to add insult to injury. The starting point should be approaching communities that have not been overburdened in the past or present.

I would be extremely reluctant to allow elected leaders or other community "representatives" to make siting decisions on behalf of residents. Voting or direct democracy is imperfect, too, but better. A sizable minority of opposition should be able to block a proposed siting. I don't have a number, but if say 20% of a community is vehemently opposed, you cannot say a facility was sited with consent.

The DOE and other government agencies are not always trusted sources. DOE should provide funding for communities impacted by potential siting to conduct *their own* analyses, which may involve considering traditional knowledge, local stories and lived experiences, and other less quantitative approaches. It also enables communities to identify their own preferred and trusted sources to conduct the analyses. Along these lines, the timeline for considering siting needs to be driven by communities, not arbitrarily imposed on them by DOE.

If DOE is serious about consent, no has to mean no. There should be no further efforts to cajole or sweeten a deal. Similarly, while compensation should be expected, it can be perceived as a forced choice or bribe. For instance, a community should not have to accept a nuclear waste facility in order to get the resources it needs to remediate lead in its water--it deserves to have lead-free water regardless and that is a responsibility of government apart from the siting decision. Please take care not to intertwine issues that deserve to remain separate.

Please do not offer lower compensation for a poor or marginalized community than would be offered to a privileged one. I remember reading about how the 9/11 victims fund was disbursed based on the lost earning power of the deceased. Families of stock traders received up to \$7 million while others saw just \$250,000 because presumably, their lives were worth 30 times less. Look to precedents of how much wealthy communities have been compensated for similar EJ issues or siting and use that as the baseline for nuclear

waste siting.

Tribal declarations of land sovereignty need to be respected above all. A broken treaty does not become irrelevant simply because it was agreed to a century ago. Those are still legally binding; if a Tribe declares property to be a sacred site, even if it is on "federal land", that declaration should 100% without question take that site off the table.

Thank you for considering my feedback. Please confirm receipt of this message and how the feedback will inform your process. I

Kind regards,
Justin

Justin Schott (he/him)
Project Manager, [Energy Equity Project](#)
Urban Energy Justice Lab
University of Michigan School for Environment & Sustainability

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From: Simone Anter
Sent: Friday, March 4, 2022 1:00 PM
To: Consent Based Siting
CC: Dan Serres
Subject: [EXTERNAL] Columbia Riverkeeper's comments on RFI: Consent-Based Siting and Federal Interim Storage
Attachments: 2022.03.04 Riverkeeper RFI Consent Based Siting and Federal Interim Storage.pdf

Hello,

Attached, please find Columbia Riverkeeper's comments on the RFI: Consent-Based Siting and Federal Interim Storage.

Thank you,
Simone

--

Simone Anter (she/her) | Staff Attorney | [Columbia Riverkeeper](#) | [REDACTED],
[REDACTED] | [REDACTED] | [REDACTED]

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Annual report; Victories in 2021; What Lies Ahead in 2022

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Columbia Riverkeeper
1125 SE Madison St. Suite 103A
Portland, OR 97214

March 4, 2022

Via Electronic Mail

Office of Nuclear Energy
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

Submitted electronically to consentbasedsiting@hq.doe.gov.

RE: Columbia Riverkeeper Comments on RFI: Consent-Based Siting and Federal Interim Storage

To Whom It May Concern:

On behalf of Columbia Riverkeeper, our 16,000-plus members and supporters across the Pacific and Inland Northwest, particularly those downwind, downriver, and with direct connection to the Hanford site, we submit the following comments regarding the December 2021 public notice for a request for information (RFI) for consent-based siting and federal interim storage issued by U.S. Department of Energy (Energy).

You may contact Dan Serres, Conservation Director for Columbia Riverkeeper, with responses or questions. Mr. Serres' contact details are: [REDACTED]

[REDACTED]. Columbia Riverkeeper's address is: Columbia Riverkeeper, 1125 [REDACTED]
[REDACTED]

I. Introduction

Columbia Riverkeeper (Riverkeeper) is a 501(c)(3) nonprofit organization with a mission to protect and restore the Columbia River, from its headwaters to the Pacific Ocean. Since 1989, Riverkeeper and its predecessor organizations have played an active role in educating the public about Hanford, increasing public participation in cleanup decisions, and monitoring and improving cleanup activities at the Hanford Nuclear Site (Hanford). Riverkeeper and its 16,000 members and supporters in Oregon, Washington, and beyond have a strong interest in

protecting the Columbia River, people, fish, and wildlife from contamination at Hanford, including pollution originating in Hanford's tank farms. Hanford already houses a huge quantity of waste from the production of nuclear energy at the Columbia Generating Station (CGS) and research and production of nuclear weapons material, including two-thirds of the United States' plutonium for nuclear weapons.

The RFI process should not be used to supersede or cloud any existing interpretation of the Nuclear Waste Policy Act (NWPA) nor the obligations of the U.S. Dept. of Energy (Energy) to address the massive contamination and storage difficulties already present at Hanford. Energy is considering waste disposal plans and a process for interim storage siting of high-level nuclear waste (HLW), which includes spent nuclear fuel (SNF) disposal programs for both commercial and defense waste. As stated already by previous commenters, Energy should first and foremost protect the resources of Tribal communities and honor trust and legal commitments made through treaties, the supreme law binding Energy to its commitments.

Riverkeeper supports the concept of community consent for any nuclear waste disposal facility and any facility with nuclear hazards. Furthermore, we oppose any additional waste being shipped to the Hanford site beyond what is already being accepted. No high-level or other nuclear waste should be disposed of so close to the Columbia River. Hanford carries a disproportionate burden of nuclear waste pollution already. There are communities and Tribal Nations impacted by the Hanford site who have adamantly advocated for decades against additional HLW waste being imported to the Hanford site, *ever*.

To open a "consent-based" siting process inclusive of the Columbia River Basin ignores a basic reality: people across the Northwest have already refused the concept of additional waste being shipped to Hanford. Since the proposal for the Basalt Waste Isolation Project and subsequent proposals for adding HLW, Greater than Class C, mercury waste, or other dangerous waste to Hanford, communities all across the region connected to the Columbia River have voiced a desire to protect and restore the Hanford Reach. Any process that incorporates Hanford as a serious consideration, undermines the region's faith in Energy's focus in cleaning up the pollution already present at Hanford; pollution which threatens the Columbia River and future generations for thousands and perhaps millions, of years.

More broadly, because of the extremely dangerous and long-lived character of the waste involved, Energy should not seek the consent of communities already overburdened with massive quantities of radioactive waste, including waste mixed with other toxic substances. If Energy seeks to prioritize equity, it should listen carefully to the concerns, objections, or outright opposition to the disposal of nuclear waste on lands critical to the health, safety, and natural resources of Tribal communities. Further, the Columbia Basin's Black, Indigenous, People of Color (BIPOC) and low-income communities are most likely to suffer the consequences of any potential pilot, interim, and long-term storage for nuclear waste, should more of this type of contamination be introduced to the Columbia River. For Hanford, similar impacts would occur if Energy failed to meet its obligation to remove HLW to geologic disposal in a safe and effective manner, as required under the law

Columbia Riverkeeper supports effective cleanup at Hanford, and we are grateful for those who help to make it happen, as much as possible. We recognize that Hanford's HLW is legally required to be disposed of in a deep geologic repository, and this facility does not yet exist. We support the efforts underway to address some of Hanford's most harmful pollution, including the treatment of groundwater pollution that results from waste in the Central Plateau. Closer to the Columbia River, Energy has successfully removed source material in the River Corridor, such as degrading spent fuel in Hanford's K Area, in addition to pumping and treating groundwater adjacent to the Columbia River. Projects undertaken to immobilize Hanford's most dangerous HLW and transuranic wastes benefit the region by addressing the pollution legacy of producing plutonium for nuclear weapons. Under the NWPA, HLW *must* be disposed of in a permanent, deep geologic HLW repository.

Energy's proposal for protracted interim storage causes concern for Hanford communities who have long sought a permanent geologic repository for Hanford's tank waste and other HLW waste. We recognize that the present situation involves Hanford's facilities, soils, groundwater, and the River itself storing the radioactive waste from nuclear weapons production, a de facto and tenuously permitted form of long-term storage. Despite cleanup efforts, Hanford houses an outsized proportion of the nation's radioactive waste and pollution. The stakes for Hanford cleanup are high: the Hanford Reach, the last free-flowing section of the Columbia with essential salmon spawning habitat, presents a stunning landscape laden with astounding contamination levels, both above and beneath the ground and in the Columbia River itself. The area served by the Columbia River, the lifeblood of the Northwest, relies on the river for drinking water, fishing, agriculture, and a wide variety of other purposes sensitive to the contamination already located at Hanford.

For the purposes of considering future sites for additional waste disposal, Hanford should be dismissed as a consideration for any future development of facilities that accept additional HLW. The radioactive burden at Hanford should lessen over time, if managed properly. Accordingly, adding radioactive pollution would undermine the mission of cleanup. Considering Hanford would require a re-litigation of the Tri-Party Agreement, and a significant abrogation of existing commitments to Tribes that use and depend on the Columbia River, undermining limited trust between Energy and Hanford's many downstream, downwind, and nearby communities. Hence, we urge Energy to conceive of its high-level commercial and defense-related waste programs without considering Hanford to be a realistic prospect for additional waste, and with the understanding that Energy has already committed to moving some of Hanford's dangerous radioactive waste away from the Columbia River and out of Hanford.

The nature and history of HLW at Hanford is murky and troubled. Hanford bears the brunt of the waste generated from processing spent fuel into weapons-grade plutonium. Commercial waste, including the waste stored at the Columbia Generating Station (CGS), the presence of highly polluted facilities in Hanford's 300 area, and the lack of commercial HLW storage poses additional problems because of its proximity to the Columbia River. Hanford's

nuclear waste issues make it one of the most radioactive landscapes on the planet, the most contaminated site in the Western Hemisphere, and critically important by virtue of its location in the midst of the Columbia River Basin. Hanford has been a focal point of waste discussions for years, and Energy's draft plan describes the "heavy metal" stored at Hanford and in other sites

High-level radioactive waste, most of which was generated by reprocessing for defense nuclear activities, consists of roughly 90 million gallons of high-level waste liquids, sludges, and solids. Most of the defense high-level radioactive waste in DOE's current inventory is stored at the Hanford and Savannah River sites and is planned to be (or has already been) vitrified into a glass form. DOE also manages defense high-level radioactive waste in a dry calcine form at the Idaho National Laboratory. DOE also manages spent nuclear fuel from the operation of the U.S. Navy nuclear fleet, and from research and development (R&D) activities. The DOE spent nuclear fuel inventory totals approximately 2,400 MTHM (metric tons of heavy metal).¹

Given the tremendous quantity of SNF and HLW remaining, even leaking, at Hanford, Energy must focus its energy in the Northwest on cleanup and removal of waste from the Hanford site, as guaranteed by law. Contamination from Hanford already reaches the Columbia River, this is unacceptable and any plans that would increase this contamination should be abandoned.

II. Responses to Energy's Questions

We offer additional following comments on some of the questions posed by Energy.

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent based siting process?

Energy states that its process must be "open, transparent, and responsive" when addressing the process of siting HLW storage facilities, including the development of clear social equity and environmental justice priorities in the process.² In doing so, Energy must recognize the current, vastly disproportionate burden that BIPOC communities face in human health, environmental, and economic harm from the location of nuclear waste in the midst of their landscapes, watersheds, and communities. The current location and impact of HLW storage, including the waste at Hanford, remains profoundly inequitable.

To build in considerations of social equity and environmental justice, Energy must first address the immobilization of waste where it currently remains. Future generations will inherit the contamination of all the HLW-related pollution currently leaking into soils, migrating in groundwater, and reaching surface waters such as the Columbia River, the lifeblood of the

¹ Draft Process, Consent-Based Siting. 2017. P. 3-4

² U.S. Department of Energy. 2021. Webinar on Consent-Based Siting Process.
<https://www.energy.gov/ne/consent-based-siting>

Northwest. Energy must build trust through a renewed and prolonged commitment to protecting the Columbia River. Regrettably, Energy is in the process of undermining this trust by hardening its position regarding potentially reclassifying HLW and altering the definition of HLW, itself. Columbia Riverkeeper and partner groups, as well as Tribal Nations, have directly objected to Energy's approach to re-classifying or re-defining HLW.

As stated above, Energy must prioritize the removal of waste from communities that face environmental justice challenges. BIPOC communities already facing inequitable impacts should be excused from consideration for receiving new waste and strongly preferred for the removal of waste to a deep geologic repository, when such a facility or facilities are established as required under the NWPA. Having already refused to consent to new waste, Columbia River Tribes, Washington state, the state of Oregon, Hanford and its surrounding communities have made their voices clear.

Should Energy choose to pursue a consent-based siting approach at Hanford, despite these strong objections, Tribal Nation's, whose cultural and religious resources are impacted, should be given a veto right. True consent-based siting would honor a veto from sovereign Tribal Nations who oppose increasing the waste burden on their communities.

Energy should move rapidly to disincentivize the production of new commercial nuclear waste, particularly in the absence of a deep geologic repository. The generation of new HLW, including SNF, in or near BIPOC communities deepens the inequity of the nuclear waste problem across the U.S.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

We agree with comments from the Shoshone-Bannock Tribes who wrote, "DOE must not infringe on treaties with Indian tribes. Treaties are the supreme law of the land and with DOE being a trustee of Tribes, we expect that DOE will add this factor into the first phase of its siting assessments and considerations."

Tribes should not be lumped in with other stakeholders. Concerns about the origination and disposition of HLW have been raised by Tribes since the beginning of the Manhattan Project, the nuclear industry and nuclear weapons industry, and the creation of the first nuclear facilities in the U.S.. Tribes have faced disproportionate impacts from nuclear weapons production, nuclear power production, and the creation of nuclear waste. Tribes should be supported in playing a central role in the siting of nuclear waste storage facilities, meaning they should have veto power over the introduction of any new waste that would impact their lifeways and health, because land, air, water, historic, cultural, and spiritual resources are already profoundly impacted by the burden of radioactive and toxic pollution. Assistance, such as compensation for time, educational resources, housing, improvements to information technology and accessibility, and a protracted period of relief from nuclear waste dumping and its impacts

are examples of some practical ways that Energy can bolster equitable discussions about nuclear waste.

For all communities, to begin a consent-based process, key stakeholders must have the ability to refuse new waste and an assurance that current HLW remains committed to a deep geologic repository as required in the NWPA. Tribal, State, and local governments and officials should be given the choice to refuse consideration for additional waste, such as at Hanford. Columbia River Tribes have spoken clearly in opposition to consideration of Hanford as a pilot interim storage facility, a larger consolidated interim storage facility, or a geologic repository for SNF and HLW originating onsite or offsite. The entities that refuse new waste continue to have a crucial role in the selection of deep geologic repositories, regardless, because of the potential to move waste away from areas that are guaranteed under the NWPA against becoming permanent repositories for HLW. Hanford urgently needs opportunities to lessen its radioactive inventory, and the objection of the region to new waste near the Columbia should not be misconstrued as a disinterest in the process, or a lack of high stakes in the process.

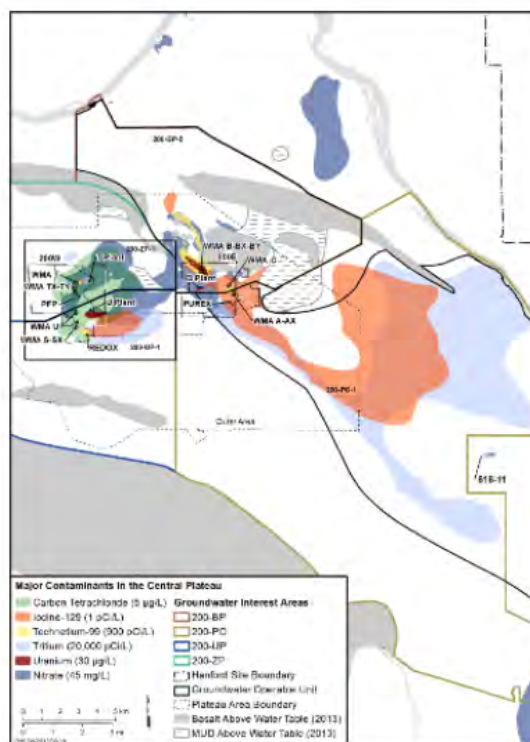
In 1986, Dr. Russell Jim, the late founder of Yakama Nation's Environmental Waste and Restoration Program and a world-renowned expert on Hanford and its nuclear waste issues, testified to Congress. He stated

Any reasonable, geologically-based site screening process would reject that site, with its highly fractured, saturated rock conditions, proximity to one of the country's most important rivers, and extraordinary geologic complexity, in favor of less complex and less saturated alternatives.

This view is not just the (Confederated Tribes and Bands of the Yakama Nation) saying "Not in My Back Yard." The view that the Hanford site would never have been selected on the basis of geologic suitability has been expressed in various forms by numerous respected scientific sources including the National Academy of Sciences, the U.S. Geologic Survey , and DOE's own Hydrology and Geology Overview Committee for the Hanford site. The Nuclear Regulatory Commission has gone to great lengths to avoid making such a conclusion explicit, apparently because of an unjustifiably cramped view of its authority to review DOE's site selection process . Nevertheless, the Commission has twice leveled technical criticisms at DOE's formal analyses for the Hanford site which make this same conclusion virtually inescapable.

Since the Hanford site could not have been selected as potentially acceptable on the basis of geologic considerations, as required by the NWPA, any reasonable site selection process should have eliminated it. The fact that DOE's process permitted the agency to "fudge" the Hanford site into the top three is sufficient indication of its failure.

In 2022, by virtue of the ongoing, unresolved HLW problem and Hanford's outsized role in containing the nation's waste, it is clear that Energy has failed to fully grasp the clarity of Dr. Jim's comment. Further, Hanford's pollution remains so significant, dozens of square miles of groundwater remain polluted above acceptable levels (see map of groundwater plumes).



Decades after Dr. Russell Jim's testimony to Congress, Energy must begin its consultation with Tribes by recognizing their positions with respect to the production, import, storage, and cleanup of nuclear waste. For example, the 2017 comments of the Yankton Sioux Tribe raised important questions about Energy's process, stating

With respect to the “Trust Relationship with Indian Tribes,” the Tribe recognizes that the DOE is attempting to some extent to fulfill its federal trust responsibility. However, this section states that “the process will take into account siting impacts on sacred tribal lands, and other areas and resources of religious or cultural significance.” (Emphasis added.) However, merely taking these impacts into account is insufficient. The DOE must ensure that, absent a tribe’s consent, the process will not allow siting in such a way that sacred tribal lands, and other areas and resources of religious or cultural significance, are not impacted. Further, the interests and rights of the Tribe and other tribes extend beyond religious and cultural resources. This requirement of the siting process must also apply to all land and resources including a tribe’s reservation, treaty lands, lands to which a tribe has aboriginal title, and water sources that the a tribe uses for

consumption or cultural and religious purposes – and should not be limited to areas of religious or cultural significance.³

The Yankton Sioux Tribe's comments resonate today, five years later, and their full letter from April 14, 2017 provides additional information, including a resolution from the Tribe regarding the placement of any nuclear waste nearby.

Comments of the Cheyenne River Sioux Tribe also raise important concerns about the implications of consent-based siting for rights beyond the recognized borders of reservations. They wrote:

To be clear, the Cheyenne River Sioux Tribe adamantly opposes nuclear waste disposal on its Reservation located in north-central South Dakota, which was set aside for us as a permanent homeland by the Act March 2, 1889, ch. 105, 25 Stat. 88. (Map of Cheyenne River Sioux Reservation is enclosed herewith.) The Tribe will not consent to siting of nuclear waste on our Reservation. However, our rights extend beyond our Reservation borders as a matter of federal law and they are rights for which the United States owes us a fiduciary duty. Therefore, the purpose of these comments below is to insist that DOE impose procedures as a part of its Process that meets the United States' duty to the Tribe in the event that the agency considers a site that impacts the Tribe's rights or trust resources.⁴

The comments support the concept that Tribes with water rights, hunting and fishing rights, and historic, spiritual and cultural resources should have the authority to refuse nuclear waste facilities. The full comments of the Cheyenne River Sioux Tribe offer much more detailed information regarding the federal government's trust responsibilities and treaty obligations, and the need for pre-decisional consultation regarding Energy's actions with respect to nuclear waste.

Comments from the Shoshone-Bannock Tribes in 2017 emphasize the need to protect the environment and human health and safety, recognizing that the areas impacted may be large and diverse.

We have a duty to protect air, water, land, and people and other life. Any siting decisions must be the least likely to impact the human environment in the event of spills or accidents or natural disasters. For example, in the event of a human or natural disaster, what site(s) will be least likely to impact air, groundwater, surface water, and the land on

³ Yankton Sioux Tribe. 2017. Business and Claims Committee Resolution. "Opposition to Deep Borehole Disposal of Nuclear Fuel and Other Used Fuel Disposition Near Yankton Sioux Tribal, Treaty, and Aboriginal Lands and Resources."

⁴ Cheyenne River Sioux Tribe Comments in Response to Request for Public Comment on Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Wastes, 82 Fed. Reg. 4333. April 14, 2017. P. 2

which the people rely? In the siting process, we urge the DOE not to rely solely on present scientific understanding of the environment, but also on Native American traditional knowledge from potentially affected Indian tribes and/or those tribes within a several hundred mile radius from any proposed site(s). Combining such knowledge may provide a more thorough, and thus a more robust, framework from which to base siting Decisions.⁵

The Shoshone-Bannock Tribes' comments also emphasize several points about siting considerations:

First, factors such as proximity to major population centers, national parks, and other areas of special significance would be used to exclude a site from consideration. In this phase, we urge the DOE to consult with Indian tribes and include sacred sites and special cultural areas as part of the "other areas of special significance." Tribes must be consulted early in the process, before the public and stakeholders, as tribes are sovereign. Tribes must not be placed in the category of stakeholders or public. For a second phase of the site assessments, DOE offers a list of possible factors that would be used to analyze site suitability or unsuitability. We urge the DOE to factor in risks to groundwater and air contamination. Is the site located near a large aquifer? In the event of a catastrophe, how can a site largely prevent radiation exposure to water and air?⁶

Tribes, states, local governments, and the many communities that are impacted by nuclear waste do not trust Energy when they perceive that the agency is attempting to renege on previous commitments. At Hanford, Energy has at times failed to adhere to the NWPA and the Tri-Party Agreement (TPA), and its commitments to tribal nations, states, and other communities under current laws. Energy must build trust, first.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

The most significant benefit to Columbia River communities from continued pursuit of a suitable deep geologic repository will be the removal of HLW from Hanford, as required by law. The states of Oregon and Washington as well as Columbia River Tribes have been willing partners and often leaders in the effort to immobilize, properly store, and ultimately transition Hanford's long-lived, mobile, SNF and HLW inventories to a safe geologic repository.

⁵ Shoshone-Bannock Tribes' Comments on the Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste (January 12, 2017). April 14, 2021. P. 1

⁶ Shoshone-Bannock Tribes' Comments on the Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste (January 12, 2017). April 14, 2021. P. 2

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

As described more in depth above and further below, we have deep concerns about the concept of siting a federal interim storage facility within the areas already heavily impacted by contamination from commercial and defense nuclear waste. Because the federal government has failed to provide a consistent commitment to cleanup and the immobilization of waste, few communities will enjoy the confidence and knowledge required to accept a new federal facility for the storage of HLW.

Energy's current effort to redefine and reclassify HLW undermines the consent-based siting process. In a context where Energy fails to commit to its Treaty and legal obligations to Washington and Oregon, as well as nearby communities, communities cannot trust that a consent-based siting process will address the full scope of the HLW problem.

We support many of the concepts put forward by Energy to engage in a process that involves more community consent. Many steps identified and the process of asking questions in this RFI may provide more clarity for Energy about the problems the nation faces with its nuclear waste.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

Energy may begin by addressing issues already raised in 2017. Many commenters raised issues in previous years that identify ways for communities to establish expectations. Many commenters have made the first expectation clear: that Tribal communities be consulted at the outset and be given the opportunity to refuse involvement in any process to site a new nuclear waste facility, as described more fully above by comments and testimony from multiple Tribal Nations. Additionally, the California Energy Commission (CEC) and other commenters wrote detailed comments about the processes and concerns related to siting waste facilities near communities already impacted by toxic and radioactive pollution. The CEC wrote that, to achieve an ethical approach, "the negotiation requires engagement of the affected entities in a transparent process while ensuring appropriate financial support and informational resources." The CEC added, "...the affected community must clearly understand the nature and consequences of a generational waste storage facility before formulating a binding agreement. To this end, the degree of regional versus federal oversight must be fairly balanced, and the DOE should provide a preliminary outline of expected and negotiable authorities regarding the waste facility."⁷ Communities must be empowered with the time and resources to understand the nuclear waste problem facing them.

⁷ California Energy Commission. 2017. Comments to the U.S. Department of Energy on Draft Consent-Based Siting Process. P. 3.

To achieve its goal of safe geologic storage of HLW, Energy must work to broaden community knowledge of current waste problems, first. For example, Hanford requires a massive expenditure of federal funds just to keep the site safe, stable, and to address basic maintenance and storage of facilities that contain HLW. Most potential recipients have no idea what they could potentially be agreeing to accept. For example, Hanford's already-leaking tank, B-109, was not sampled before it began to leak. Nearby tanks have already leaked. Two tanks released thousands of curies of cesium into the soil immediately near the tanks, and the tanks themselves hold a large volume of highly radioactive material. At tank B-110, in 1969, Hanford workers dumped 31,416 L containing 4,300 Ci of Cs-137 into the ground. The waste in B-110 had not been sampled, but both B-109 and B-110 had Bismuth-phosphate process waste (a Pu-extracting process) and other highly radioactive inputs. B-107 also had a large spill ("unplanned release"). The standard for Cs in drinking water is 200 pCi/L. Based on the volumes and quantities of cesium described in the Hanford Site's Waste Management Units Report for 2019, these two tanks in close proximity to the leaking B-109 released Cs-137 with concentrations many millions of times higher than the drinking water standard. Even after the passing of two half-lives, over a thousand curies would remain from the 1969 B-110 spill, alone. The severity of previous releases argues for a sole focus on cleanup at Hanford and a whole-groundwater approach that refuses to accept that waste will be left to migrate to the Columbia River. These are big problems to solve, and Hanford is guaranteed by law to see HLW moved offsite to a deep geologic repository.

While we appreciate the steps outlined above, we remain concerned that Energy does not yet identify a conflict resolution process. Will an objection from a key stakeholder or a Tribe cease discussion of a potential site? Will sites that currently have HLW stored improperly be given a voice and an opportunity to connect with potentially waste-accepting communities? By learning how Energy is meeting (or failing to meet) current obligations, potential recipient sites would be able to make more informed decisions. They should be given information to look at the worker safety hazards, transport release risks, and long-term groundwater implications squarely.

6. What organizations or communities should the Department consider partnering with to develop a consent based approach to siting?

Communities who experience the impacts of nuclear waste production, transport, storage, and its related contamination and pollution should have an opportunity to lead the discussion. We support the previously cited statement of the Shoshone-Bannock tribes, stating: "Tribes must be consulted early in the process, before the public and stakeholders, as tribes are sovereign. Tribes must not be placed in the category of stakeholders or public."⁸ With this in mind, it bears mentioning again that Tribes should possess veto power over the siting process and the receiving any new nuclear waste.

⁸ Shoshone-Bannock Tribes' Comments on the Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste (January 12, 2017). April 14, 2021. P. 2

States have a clear role to play as well, and should be given authority on the regulation of toxic and radioactive waste stored within the state, as well as the ability to refuse additional nuclear waste. The National Conference of State Legislatures (NCSL) wrote, “DOE must take the steps to further define which aspect of the ‘community’ has the jurisdiction to enter into such an agreement. NCSL urges you to redefine “community” to ensure the state’s consent.”⁹ NCSL offered further legal reasoning in 2017 to support its argument that states have an authoritative role to play in nuclear waste siting and disposal decisions.

Oregon, Washington, Idaho, and all western states coordinate the shipment of dangerous toxic and radioactive waste, and these shipments have a direct impact on the communities through which they pass. The public often lacks access to information about nuclear waste from a variety of waste-producing industries, including nuclear power generation, nuclear weapons production and research, and other industries like fracking or mining which may concentrate naturally occurring radioactive materials. States work diligently to pursue and carefully share safety information, and in recent years have sharply criticized the transparency of federal agencies in how they are managing some types of waste. Thus, states like Oregon through which significant shipments of HLW might occur in the future should have decision-making authority as well over transport routes.

Area 2: Removing Barriers to Meaningful Participation

1. *What barriers might prevent meaningful participation in a consent based siting process and how could those barriers be mitigated or removed?*

Many communities who are grappling with existing nuclear waste pollution issues lack the necessary resources to assess the harms of radioactive and toxic pollution in their communities, and this limits the ability of community voices to shape the solutions to pollution problems in their midst. Typical barriers include lack of housing, transportation access, health care, education, and other services that are less available in communities experiencing the pollution from nuclear waste.

The barriers described above can deepen when communities experience the displacement, trauma, and stigmatization of being a dumping ground for nuclear waste, often unwittingly or unwillingly. Columbia Basin’s BIPOC and low-income communities are most likely to suffer the consequences of potential pilot, interim, and long-term storage for nuclear waste. The imposition of waste and its pollution on communities where its generation and use created disproportionate burdens already creates a difficult problem. Energy’s approach exhibits obvious and troubling inertia in favor of keeping waste in current de facto, inadequate HLW storage, and building new facilities nearby to compound the problems we currently face.

⁹ National Conference of State Legislatures. 2017. Comments on U.S. Department of Energy’s (DOE) Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste. P. 2

Immediate actions to lessen barriers to involvement include: cessation of production of nuclear waste, as quickly as possible; devoted resources to addressing pollution harms in communities with commercial or defense nuclear waste that meet Treaty commitments first, and follow through on additional requirements from state, local, and community-level agreements; and, a community-led, science-based approach to removing HLW to deep geological disposal as required by the NWPA.

Finally, as referenced above, Energy's lack of established trust in Tribal areas, local, state, and regional governments, and other communities presents a major obstacle to proceeding with a consent-based approach. Energy could improve trust in its decision-making by ceasing its effort to redefine HLW on a national scale (a process that has disappointingly continued under the Biden Administration), and efforts to reclassify HLW at Hanford, particularly in ways that undermine treaty obligations and the Tri-Party Agreement.

III. Conclusion

Hanford's nuclear waste problem, including waste contaminating groundwater and reaching the Columbia River itself, demonstrates the high stakes for cleanup, safe storage, and removal of HLW to a safe geologic repository. Despite previous and ongoing cleanup efforts, I-129, Tc-99, and other radionuclides and toxins are present in groundwater above standards at Hanford. SNF and tank waste are stored at Hanford, and tank waste continues to leak. Contaminants already in Hanford's environment are present in large quantities in HLW, an indication that Hanford is blatantly unsuitable for long-term, or protracted interim storage.

For the communities that will be approached for inclusion in this siting process, it will be important for them to have a clear understanding of the potential indefinite, radioactive, toxic impact of handling and storing nuclear waste. Tribes should be given veto power over the introduction of any new nuclear waste into their homelands which would affect lifeways and health, prior to other stakeholders. Overall, Energy should work to halt the production of HLW as quickly as possible until Energy can demonstrate that it has a plan to address its responsibility under the NWPA to provide long-term deep geologic disposal. Further, Energy should adhere to the federal government's obligations under treaties and agreements with state, local and other entities who have authority to protect their communities from the environmental, public health, and other harms of toxic radioactive HLW, specifically by ceasing efforts to reclassify and re-define HLW.

Please reach out to Dan Serres, [REDACTED], with any questions.

Sincerely,

Dan Serres,

Conservation Director
Columbia Riverkeeper

From: Koroush Shirvan
Sent: Wednesday, December 8, 2021 4:47 AM
To: Consent Based Siting
Subject: [EXTERNAL] Responses to DOE's public information request

Dear DOE Colleagues,

Nuclear waste (Spent Nuclear Fuel - SNF) is a major public and policy maker acceptance issue when it comes to supporting and characterizing nuclear energy as safe and **sustainable** source of energy. Particularly, the policy makers are keyed on it as it has been a controversial subject and repeating ancient rhetoric is part of a political strategy. As such, I believe it is very important to address this topic now to gain political capital support for expansion of nuclear energy in US even though technically, on-site storage is sufficient for the next 30 years as the existing fleet is undergoing additional life extensions.

First, the cost of dry cask and dry cask transportation relative to the current profit margins for utilities is significant (it is true that the cost is small compare to cost of electricity generation but compare to profit margins it is significant and no utility can bear this cost). Therefore, the federal government must provide funding for utilities that own multiple nuclear power plants to see if they are willing to consolidate their dry cask SNF in a single site. That could reduce the waste distribution from > 56 (28 states) (there are many in sites that have and are going under decommissioning) to about 10 sites. This way we can loud a 5-fold reduction in spent fuel distribution in the US to gain political capital which is the root cause that this program is trying to address in my view. This is also more practical as states with single nuclear power plant such as Massachusetts, Vermont, Iowa, Wisconsin etc. have already decommissioning their plants so most of the consolidation would be within a state or neighboring state with similar ideologies.

Down the road, if US decides to go with the nuclear option for decarbonization and we vastly increase the size of our fleet, then at the location of interim storage sites, facilities such as fuel reprocessing plants or fuel fabrication plants can be constructed. This way the storage facility would serve a dual purpose and eventually use SNF and optically be more useful to the local government by bringing non-waste related jobs to that state.

To summarize, DOE should not take charge and rather give money to the private industry to perform the SNF consolidation within a state as a first step. Then eventually if nuclear energy deployment takes place, DOE should fund further consolidation driven by private industry and sponsor non-SNF jobs creating additional opportunities for the consolidated sites to improve their usefulness and long term support by the local government.

Best wishes on your journey to solve this critical issue,

Koroush Shirvan, PhD
John Clark Hardwick (1986) Career Development Professor
Co-Director of Reactor Technology Course
Department of Nuclear Science and Engineering
Massachusetts Institute of Technology

[REDACTED]
[REDACTED]

Email: [REDACTED]

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From: [REDACTED]
Sent: Friday, March 4, 2022 2:38 PM
To: Consent Based Siting
CC: Trunzo, Alisa; Howard, Robert L; Petry, Kimberly
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: NWSC Response to DOE RFI re Federal CIS using CBS 030422.pdf

The Nuclear Waste Strategy Coalition (NWSC) respectfully submits the attached comments regarding DOE's RFI on Consent-Based Siting and Federal Interim Storage.

Thanks to all,

Katrina

Katrina McMurrian
Executive Director
Nuclear Waste Strategy Coalition

[REDACTED]

[REDACTED]

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March 4, 2022

Office of Nuclear Energy
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

Sent Via Email: ConsentBasedSiting@HQ.DOE.gov

RE: Comments on U.S. DOE Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities

The Nuclear Waste Strategy Coalition (NWSC) appreciates this opportunity to comment on the U.S. Department of Energy's (DOE) Request for Information (RFI) on consent-based siting (CBS) for federal consolidated interim storage (CIS) facilities. We also thank the DOE team for their willingness to engage with the Coalition and answer questions about this initiative. The NWSC hopes that DOE's efforts are successful, and we endeavor to be constructive in our engagement.

Foundationally, the NWSC supports efforts by the federal government to reestablish a national integrated nuclear waste management program (addressing interim storage, transportation, and permanent disposal) to:

- avoid permanently stranding spent nuclear fuel (SNF) and high-level radioactive waste (HLW) indefinitely stored in 35 host states and communities without their consent;
- address the associated negative economic impacts to those tribes, states, communities, and taxpayers; and
- enable the federal government to meet its statutory and contractual obligations to electric customers under a law established 40 years ago.

The NWSC supports transparent engagement with host communities such as through some form of CBS for identifying nuclear waste storage or disposal facilities on a reasonable timeline. The NWSC also supports one or more CIS facilities as part of an integrated nuclear waste management program. The NWSC does not understand how the proposed DOE CBS initiative meets these shared goals. The NWSC has specific and fundamental concerns and recommendations with DOE's proposed approach that we have outlined below and in our past comments to DOE (attached). In short, the DOE approach postulates the existence of a community that is knowledgeable about SNF, willing to volunteer to host it for an indefinite "interim" period, and able to secure support. While we would like to think such a community exists, the NWSC is founded on the reality that its members, who have hosted SNF storage sites for decades, should not be expected to volunteer to continue the status quo for decades longer given the federal government's track record of failing to meet its nuclear waste removal requirements.

The differences in our perspective and that of the DOE center around whether DOE can make meaningful and timely progress toward the important goal of reestablishing a national integrated nuclear waste management program with DOE's primary pursuit of establishing a federal CIS facility (and not in parallel with progress on disposal). While DOE has transportation infrastructure work underway and, with this

RFI, proposes to initiate a CBS process to facilitate interim storage in the future, DOE suggests that they will take no action on a permanent repository until Congress provides new direction and funding.

Simply, the NWSC cannot understand how a national integrated nuclear waste management program can be implemented—or even how to accomplish success on DOE’s plans for federal CIS facilities—without the assurance of meaningful progress on permanent disposal at the federal level. Unfortunately, we see little indication of resolution of a foundational problem that has challenged all proposed CIS facilities thus far—the inconvenient truth that all work on a permanent solution has been stopped by the federal government, raising unanswered questions about the “interim” nature of any interim storage facility until the federal government shows leadership with a more comprehensive plan.

The following table highlights areas for which the NWSC and DOE likely agree (see “The NWSC acknowledges . . .” column) as well as concerns that we respectfully ask DOE to consider (see “. . . but please consider . . .” column) as it embarks on a CBS process to identify federal CIS facilities.

<i>The NWSC acknowledges . . .</i>	<i>. . . but please consider . . .</i>
<p>By all accounts, DOE Secretary Granholm and the Office of Nuclear Energy team want to make progress on nuclear waste management and recognize that progress on permanent disposal is necessary. In fact, in remarks at the June 2021 American Nuclear Society (ANS) Virtual Annual Meeting, Secretary Granholm stated:</p> <p>“At the same time, we are making it a priority to fund and find a long-term disposal solution to nuclear waste. We know it’s not going to be Yucca Mountain. Instead, we want to move forward with finding a consent-based siting strategy. It’s why our funding request includes twenty million dollars to support planning for the near-term consolidation and storage of nuclear waste.”</p>	<p>Despite DOE’s recognition that permanent disposal as a critical part of an integrated waste management program, the DOE RFI is silent with respect to employing a CBS (or any other) approach for advancing permanent disposal facilities.</p> <p>Additionally, DOE chooses not to take actions within its existing authority to demonstrate a commitment to long-term resolution. For example, DOE dismissed the May 2021 recommendation by 8 organizations (ANS, DPC, ECA, NARUC, NEI, NWSC, SFCTF Science Panel, and US NIC) to establish a separate office in DOE that would, among other things, better facilitate the continuity of a focus on waste management across Presidential Administrations and provide confidence to potential CIS host communities that DOE is pursuing resolution.</p>
<p>It is the responsibility of Congress to authorize and fund DOE activities, and Congress has given no recent express direction and funding to support either:</p> <ul style="list-style-type: none"> • DOE consent-based siting efforts beyond federal CIS facilities (i.e., for permanent disposal facilities); or • Progress on longstanding obligations concerning permanent disposal under the Nuclear Waste Policy Act (NWPA). 	<p>In its Congressional budget requests, testimony, meetings, and other outreach, DOE has an opportunity—and a responsibility—to convey:</p> <ul style="list-style-type: none"> • the necessity of federal government action on—and sustained funding of—permanent solutions in parallel with action on CIS; • the challenges that private CIS initiatives have faced from states, at least in part due to government inaction on permanent facilities; and • specific reforms that would facilitate meaningful progress, including <i>both</i>: <ul style="list-style-type: none"> ○ governance reform to remove the program from DOE to an independent waste management entity as recommended by the Blue Ribbon Commission; and ○ sustained access to the Nuclear Waste Fund (NWF) without reliance on annual appropriations to support a national integrated waste management program.

<i>The NWSC acknowledges . . .</i>	<i>. . . but please consider . . .</i>
Siting critical infrastructure, such as nuclear waste storage or disposal facilities, in a manner that is equitable, environmentally just, and attains and sustains the consent of the local, state, and tribal governments of jurisdiction is a noble endeavor.	Some stakeholders appear to advocate for unanimous consent for NW storage or disposal facilities. Requiring unanimous consent for NW storage or disposal facilities could set an untenable precedent for other critical infrastructure projects.
Siting critical infrastructure, such as nuclear waste storage or disposal facilities, anywhere in the world often involves some degree of technical and political challenges; however, consent-based siting approaches in some other countries appear to be making progress.	While offering no judgment about such critical infrastructure projects, we have observed that potential host states in this country have significant authority and multiple opportunities to delay, if not halt, critical infrastructure projects (including nuclear waste management facilities) despite represented consent of the local community or tribal government. With respect to permanent disposal facilities, the federal government (or preferably a future independent waste management entity) must demonstrate to host states, tribes, and communities the facility's safety and potential benefits. With respect to CIS facilities, DOE must demonstrate to host states, tribes, and communities those same items (safety, potential benefits) as well as progress toward a timely permanent solution. The federal government's failure to carry out the NWSA should not be excused, despite political challenges, and the process for addressing technical challenges should be completed.
Developing a CBS process and achieving informed consent for a facility takes time and resources.	In addition to commercial plant owners, communities, states, and tribes across the country have already "hosted" SNF and HLW—without their consent—well beyond the timeframe promised by the federal government. <u>Every additional year of delay is both costly and unjust.</u> Insufficient resources are being allocated to compliance with longstanding statutory direction on permanent disposal, a foundational piece of an integrated waste management program. For these reasons, DOE should limit the CBS process to a reasonable and fixed time period (certainly less than a decade), especially if DOE continues to focus CBS solely on a federal CIS facility (and not a permanent repository as well).

To meaningfully support the goal of reestablishing a national integrated nuclear waste management program, we urge DOE to use available resources, including any newly appropriated resources, to:

- **Join us in calling on Congress to *simultaneously*:**
 - **authorize and fund an independent waste management organization outside of DOE** as recommended by the Blue Ribbon Commission on America's Nuclear Future and as supported by DOE in its 2013 *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*; and
 - **reform the current federal budgetary treatment of the NWF** to provide sustainable access to the fund for critical nuclear waste management activities and no longer rely on annual appropriations for funding a multi-generational program.

- **Immediately establish an office within DOE to focus on matters related to developing and managing an integrated nuclear waste management program as requested by 8 organizations in May 2021.** While an independent waste management organization outside of DOE is the goal, DOE can and should establish a separate and dedicated office sooner to facilitate current nuclear waste management efforts as well as the continuity of efforts across Administration changes. Whether coordinating with private entities on proposed CIS facilities; working with communities interested in providing consent to host a CIS (federal or private) or permanent disposal facility; proceeding on repository license application review work; or following other Congressional directives regarding nuclear waste management, DOE needs a dedicated team to focus on these issues and meet with interested and affected parties.
- **Simultaneously pursue permanent disposal and CIS with priority for shutdown reactor fuel.** Because permanent disposal is necessary *and* a decision (yes or no) on the repository license application is necessary to move forward on permanent disposal, DOE should complete the license review process. Simultaneously, DOE should facilitate efforts to site a pilot CIS facility with priority for SNF and Greater-Than-Class-C waste stranded at shutdown commercial nuclear power plant sites. While pursuing federal CIS, DOE should remain open to private CIS initiatives and determine how the federal government can remove barriers to their contribution to the storage problem.
- **Continue and expand upon constructive DOE initiatives related to transportation infrastructure that will be necessary regardless of destination.** Constructive DOE transportation-related initiatives include assessment of transportation infrastructure needs at shutdown plant sites and the testing, certification, and procurement of railcars, as well as licensed transportation casks and components, in sufficient quantities.
- **Increase financial and technical assistance to tribal, state, and local governments.** Financial and technical assistance for transportation-related emergency preparedness training and activities is critical and will provide the public greater assurance that the health, safety, and welfare of its communities will be preserved as SNF is transported.
- **Engage on broader waste management issues with key stakeholders.** DOE should expand both the scope and targets of its outreach on nuclear waste management efforts to include:
 - expanding the scope of outreach to address all components of an integrated program so that stakeholders understand the federal government's obligations and the implications of continued inaction;
 - engaging organizations representing states (National Governors Association, National Conference of State Legislatures, National Association of Regulatory Utility Commissioners, et al.) to address state-level concerns that have impeded previous CIS and permanent disposal efforts;
 - engaging tribal, state, and local governments, particularly those most impacted by the government's inaction to remove nuclear waste from existing sites and those that previously have been considered in some manner for nuclear waste storage or disposal facilities; and
 - prioritizing engagement with groups and individuals who support meaningful and timely progress on nuclear waste management; and
 - demonstrating that you listened to those engaging by taking actions in response.
- **Ensure that any CBS process is solutions-oriented, and unequivocally communicate to all stakeholders that the nation *must* have a long-term, integrated solution for nuclear waste management.** DOE should reiterate often that a national integrated waste management program is in the public interest, and it should conduct any CBS-related activities accordingly. This includes:
 - maintaining that environmental justice must account for current host communities who did not consent to the indefinite storage of SNF and HLW in their states and communities;

- rejecting any definition of “consent-based” that suggests a need for unanimity, which is an unattainable standard for critical infrastructure projects;
 - recognizing that neither Congress nor DOE should impose on tribes, states, and communities a restrictive one-size-fits-all definition or approach to achieving consent;
 - recognizing the durability of consent is critical to the long-term success of the siting process;
 - recognizing that consent must be enforceable over time;
 - recognizing tribal, state, and local officials have an important role in the siting process;
 - sharing initial screening criteria and other relevant information to aid potential hosts in determining whether to take additional steps;
 - considering potential incentives and economic benefits for those jurisdictions willing to contribute to resolution of this national problem;
 - limiting the CBS process for identifying a federal CIS facility to a reasonable and fixed time period (certainly less than a decade); and
 - requesting that Congress expand DOE direction and funding to support pursuit of CBS for disposal under provisions regarding a second geologic repository.
- **Seek all necessary additional resources in future DOE budget requests to continue and expand upon priorities in support of reestablishing a national integrated nuclear waste management program.**

The NWSC respectfully asks that DOE recognize our input as constructive, and we welcome continued engagement on these important matters. Thank you again for the opportunity to comment.

Sincerely,



The Honorable Katie Sieben
Chair, NWSC



Katrina J. McMurrian
Executive Director, NWSC

Attachment



The following comments by the Nuclear Waste Strategy Coalition are in response to the U.S. Department of Energy's "Invitation for Public Comment to Inform the Design of a Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities," 80 Fed. Reg. 79,872 (Dec. 23, 2015).

NWSC Overview and Call to Action

- The Nuclear Waste Strategy Coalition (NWSC) is an ad hoc organization representing the collective interests of member state utility regulators, state consumer advocates, state radiation control officials, state energy officials, tribal governments, local governments, electric utilities with operating and shutdown nuclear reactors, and other public and private sector experts on nuclear waste policy matters. Its primary focus is to support the removal and ultimate disposal of used nuclear fuel and high-level radioactive waste currently stranded at numerous sites across the country and to protect electric consumer payments into the Nuclear Waste Fund (NWF).
- The NWSC calls upon the federal government to act now to meet its statutory and contractual obligations under the Nuclear Waste Policy Act (NWPA) to promptly remove used nuclear fuel from existing and decommissioned reactor sites in our states. Electric consumers have paid in excess of \$40 billion (including interest) into the NWF. Consumers have dutifully met their legal obligation over the last 30 years, but the federal government has not.
- Specifically, the NWSC calls for the following:
 - **Transportation & Other Key Program Elements.** We support the re-establishment of an office within DOE solely focused on managing the nation's nuclear waste; the timely preparation of the nation's transportation infrastructure needed to support both consolidated storage and a repository program, including DOE certification and procurement of rail cars and licensed transportation casks and components; increased funding for state and tribal transportation preparation and related activities; and DOE's engagement with potential waste site host communities.
 - **Yucca Mountain License Application Completion.** Stating only that the NWPA-designated Yucca Mountain repository is "unworkable," the Administration abandoned the project in 2010. However, in response to a court mandamus, the Nuclear Regulatory Commission (NRC) completed and released the Safety Evaluation Report and Supplemental Environmental Impact Statement and found that Yucca Mountain meets the independent safety regulator's requirements as a permanent repository for the geologic disposal of nuclear waste. We urge Congress to fund the completion of the license application review and urge DOE to support the license application it submitted in 2008.
 - **Pilot Consolidated Interim Storage with Priority for Shutdown Reactor Fuel.** Congress and the Administration should facilitate consolidated interim storage as a way for the federal government to begin meeting its obligations, particularly removal of used fuel stranded at sites without an operating reactor. We are encouraged by the private consolidated interim storage initiatives.
 - **Funding Reform.** We support reforms that would ensure timely access to the NWF for its intended purpose. DOE should also consider the Blue Ribbon Commission on America's Nuclear Future (BRC) Co-Chairs' near-term recommendation to establish a mechanism by which NWF collections are limited to the specific amounts appropriated by Congress for activities under the NWPA, with the remainder of electric consumer payments held in escrow until such time as they are appropriated for NWPA activities.

- **Governance Reform.** We support moving the nuclear waste management program out of DOE entirely to an independent waste management organization, such as a federal corporation. Unlike DOE, such an entity would singularly focus on the mission of nuclear waste removal, be held accountable for progress on that mission, and better insulate the program from undue political interference.

DOE Consent-Based Siting (CBS) Efforts

- We thank DOE for reaching out to, and seeking input from, the NWSC about DOE's consent-based siting (CBS) efforts. In fact, several of our members have been invited to participate in DOE public meetings held across the country and have provided constructive input.
- First and foremost, any CBS process should complement (and not compete with) actions to carry out the NWPA, which itself recognized need for additional nuclear waste facilities and provided for local and state input into facility siting.
- The NWSC is generally pleased to see DOE ramping up efforts with respect to development of an integrated waste management system to include CBS but has significant concerns about the timing, the approach, the details, and the results.
- We are concerned about the timing and the lack of a clear action plan beyond gathering input and issuing reports. Generally, we are supportive of providing for multiple methods of communication to facilitate a broader public discourse in an effort to make progress. However, the public meetings – likely at considerable expense – appear to primarily have drawn those of us who already follow nuclear waste policy issues closely and not many average Americans as reportedly sought by DOE. In addition, the comment period is too protracted. Unfortunately, the CBS process is not set up to make meaningful progress in the remainder of the current Administration's term.
- While we understand the need for an open process and consideration of a range of perspectives, we suggest that DOE focus its limited resources on working with:
 - potential hosts, particularly those who have already taken steps toward licensing a site;
 - representatives from communities, states, or tribes who have previously expressed some level of interest in hosting a nuclear waste-related facility to ascertain what could have been – or may still be – done to advance that prospect; and
 - groups and individuals who support meaningful and timely progress on nuclear waste management.
- The NRC's role in licensing and regulating all U.S. used nuclear fuel and high-level radioactive waste facilities is important. DOE should highlight that role and avoid unnecessary duplication of the portion of NRC's well-established licensing process in which opponents, supporters, and other intervenors may be heard and raise issues that are ultimately resolved by the independent safety regulator.
- Although well-intentioned, we are concerned the CBS process will result in needless bureaucracy, additional costs, and further delay in the nuclear waste removal that the federal government is contractually and statutorily obligated to provide and for which electric consumers have handsomely paid.

Trust/Accountability

- Because DOE has not lived up to numerous contractual commitments, DOE is likely to face significant obstacles with respect to successful implementation of even the best-designed CBS process. This is one of the reasons we stress the need for DOE to actively pursue legislative reforms to include moving the program out of DOE entirely to an independent waste management organization, such as a federal corporation.
- There are things that DOE can do to begin to restore trust. It can begin living up to its numerous commitments and following the law (to include all provisions of the NWPA). One near-term action that DOE can take along these lines is to re-establish the Office of Civilian Radioactive Waste Management (OCRWM) to handle nuclear waste management issues, at least temporarily, to better facilitate a smooth, effective transition to an independent waste management organization.

Concept of Consent

- “Consent-based siting” is a nebulous concept. In fact, the phrase appears to have created an impression among some public meeting attendees that everyone in some given location must agree before a nuclear waste facility may be sited. Also, consent or the lack thereof may be highly dependent on the area ultimately determined to be “affected.” Regardless of the ambiguity of the concept, however, DOE should maintain as much flexibility as possible, particularly at earlier stages of a CBS process. Certainly, DOE should avoid furthering any impression that unanimity is necessary to achieve “consent.” DOE should also avoid being prescriptive about methods of gauging consent.
- DOE did not seek – nor does the current process seek – the “consent” of the communities within which nuclear-generating utilities have been forced to resort to indefinite on-site dry cask storage due to DOE’s failure to meet its statutory and contractual commitments. And as noted by Prairie Island Indian Community Tribal Council President Shelley Buck in Minneapolis and many others over the course of the public meetings, no one has asked whether those living near such *de facto* storage sites consent to hosting the spent nuclear fuel for the next several decades or longer.
- Endorsement from local, state, and tribal governments and populations is certainly a desired characteristic for any industrial facility, including those that manage and dispose of nuclear waste. However, if it establishes a bureaucratic process for “consent,” DOE runs the risk of establishing an unattainable goal for nuclear facilities. It is not clear why it is appropriate to establish an extra overlay of requirements on nuclear facilities but not on other industrial facilities that pose potential risks to public health and safety and the environment (e.g., chemical and petrochemical plants, highways, pipelines, liquefied natural gas terminals, windmills). Nothing in “consent-based siting” should preclude the use of a facility (nuclear or otherwise) that has demonstrated adequate protection of the public and the environment by obtaining the necessary regulatory approvals to operate.
- We are concerned that establishing an elaborate consent-based process inherently and greatly exaggerates the uncertainty associated with the facilities under consideration. Consolidated used nuclear fuel storage facilities require no active cooling systems and do not lead to appreciable doses to the public under normal and even postulated accident conditions. Similarly, a geologic repository poses essentially no hazard to the public in the short term, and must meet exacting standards for public protection out to one million years. Transportation of used nuclear fuel has been done extensively and safely for decades. DOE should consistently make these points in its communications with the public.
- Yet-to-be-determined criteria for “consent” should not be retroactively applied to existing commercial or defense nuclear waste storage or disposal facilities.
- Specifically, there is no need to impose a CBS requirement retroactively to the Yucca Mountain repository, a site designated by federal law.
- Likewise, a CBS requirement should not be applied retroactively to nuclear waste projects that have previously attained consent by investing time and resources in a bottoms-up approach. A CBS process should not adversely affect DOE’s ability to contract with private voluntary sites.
- At the same time, communities that have been previously considered in some manner for nuclear waste storage or disposal facilities should not be precluded from engaging in a CBS process due to the perception that consent cannot be achieved based on those past experiences. For example, if communities in the vicinity of the Yucca Mountain site want to engage in a CBS process, whether for a repository or storage facility, they should not be precluded. In addition, DOE should not take any actions to preclude the Yucca Mountain repository from inclusion in a broader integrated waste management program.
- DOE should actively reach out to communities that previously have been considered in some manner for nuclear waste storage or disposal facilities to gain valuable insight into both positive and negative experiences.
- We support DOE statements at public meetings that DOE is *not* seeking consent for the transport of used nuclear fuel and high-level radioactive waste. DOE should also educate the public about what it is already doing with states and tribes to lay the groundwork for the eventual transport of nuclear waste.

Concept of Fairness

- While fairness is indeed a laudable goal, the NWSC cautions DOE that it may be setting itself up for failure by focusing on a subjective standard of “fairness” that it lacks the tools to determine.
- However, in the spirit of providing constructive feedback, the NWSC believes that DOE should consider the following in its endeavor to ensure a fair site selection process:
 - DOE should not favor government-owned facilities over privately-owned facilities for that reason alone.
 - DOE should not exclude certain community, state, or tribal governments from consideration due solely to historical siting experiences or perceived obstacles that may be removed in a negotiation process.
 - To the extent funds are provided to communities, states, or tribes to support their consideration of hosting a site, such funds should be distributed based on transparent, pre-determined factors.
 - The result of such a siting process should be an enforceable consent-based system, the touchstone of which must be serving the public interest, including both those in the host communities *and* those who are counting on removal of waste from their sites and communities.
 - DOE should facilitate this process in a manner that demonstrates a willingness to take timely action and not waste time and precious resources that are needed for nuclear waste management and disposal.
 - DOE should focus on meeting its obligation to remove nuclear waste from current sites as paid for by electric consumers across the U.S. That is the ultimate test of fairness.
- More specifically, in selecting any site for waste management facilities, DOE should strive to satisfy several criteria, including:
 - A facility on the site meets applicable environmental and health and safety criteria, with margin.
 - A facility on the site can meet its mission requirements.
 - The cost is reasonable.
 - Potential host communities have an opportunity to be considered, if they so desire.

CBS Process

- We support DOE timely and meaningful engagement with potential hosts, including those interested in siting consolidated interim storage facilities with a priority for shutdown reactor fuel removal and those interested in hosting a permanent repository (such as Nye County, Nevada).
- We emphasize the need to afford potential hosts maximum flexibility so as not to limit creative, effective solutions that may be proposed by potential hosts and negotiated by the parties in consent agreements. DOE should not design a top-down, overly prescriptive process.
- At the same time, those with potential interest in hosting a facility have expressed a need for some minimum level of guidance in determining whether to take additional steps toward hosting a facility. Therefore, DOE should share any initial screening criteria with respect to candidate sites.
- A CBS process should include mechanisms to ensure that the process is not easily sidetracked by detractors who oppose meaningful and timely progress on nuclear waste management.
- A CBS process should be designed to produce a legally-enforceable and timely consent agreement so that the nation may plan, construct, and rely on such facilities in a timely manner.

Potential Use of the NWF in CBS Process

- Some communities have expressed a need for funding from the federal government to educate its citizens and further explore pros and cons to seriously assess interest in hosting a site. The amount necessary for numerous communities to undertake such an effort could be substantial. In addition, potential incentives and economic

benefits for communities and states that host consolidated interim storage or permanent disposal sites have been proposed. Again, this could be substantial. While not opposing funding for such purposes from other sources, our members have considerable concern regarding any potential expanded uses of the NWF beyond those outlined in the NWPA.

Conclusion / Call to Action

- In January 2012, the BRC, as established by the current Administration, issued a report containing recommendations on nuclear waste management issues, including a number of near-term actions that could have been implemented under existing legislative authority. Unfortunately, four years later, DOE appears to have cherry-picked the BRC recommendations on which it wants to focus. Instead, DOE should actively pursue (and propose or support Congressional legislation consistent with these items as necessary):
 - In the near term, the re-establishment of an office within DOE solely focused on managing the nation's nuclear waste, and in the longer term, movement of the program out of DOE, opting for an independent waste management organization (e.g., a fed corp) that can singularly focus on the mission of nuclear waste removal and better insulate the program from undue political interference.
 - Reform of the funding mechanism to ensure access to the NWF for its intended purpose. DOE should also consider the BRC Co-Chairs' recommendation to establish a mechanism by which NWF collections are limited to the specific amounts appropriated by Congress for activities under the NWPA, with the remainder of electric consumer payments held in escrow until such time as they are appropriated for NWPA activities.
 - Preparation of the nation's transportation infrastructure needed to support both consolidated storage and a repository program by certifying and procuring rail cars and licensed transportation casks and components.
 - Increased funding for state and tribal transportation preparation and related activities.
 - Other BRC-recommended actions that could be pursued in the near term and without additional grants of authority by Congress.
- Once again, we remind the DOE of its longstanding obligation to nuclear power plant operators and electric customers across the U.S. to carry out the provisions of the NWPA. First and foremost, DOE should support its license application for the Yucca Mountain repository and support completion of the licensing review. Such action would go a long way toward restoration of trust in DOE, an important factor in its development of a successful CBS process.
- In addition, DOE should focus on removing – and not creating additional – barriers to contracting with private entities on nuclear waste storage or disposal facilities, especially given that private entities have announced two separate proposed projects for consolidated interim storage.
- The NWSC will engage in the DOE process aimed at designing an effective CBS process, but we will continue urging timely performance by DOE to carry out its statutory and contractual obligation to remove used nuclear fuel and high-level radioactive waste from plant sites across the nation.

* * *

Thank you for the opportunity to comment. Should you have questions or wish to discuss further, please contact NWSC Executive Director Katrina McMurrian by email at [REDACTED].

From: Linda Silversmith
Sent: Friday, February 25, 2022 10:40 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Linda Silversmith

[REDACTED]

This message does not originate from a known Department of Energy email system.
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From: Kellie Smith
Sent: Friday, February 25, 2022 4:07 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

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2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Kellie Smith



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From: Alan Smith <[REDACTED]>
Date: Sunday, December 12, 2021 at 3:28 PM
To: NE Communications <necommunications@nuclear.energy.gov>
Cc: Alan Smith <[REDACTED]>
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

Will you please forward this to "consentbasedsiting@hq.doe.gov" please? For whatever reason my email says the address is not recognizable. Thank you.

Thank you for this opportunity. Given the waste produced by our extractive sources of energy, nuclear fuel waste is the most easily contained.

I was employed with the RAM Department in the HAZMAT section of DOT in the early nineties. I hope you can find value in my suggestions.

Sincerely,

Alan Smith

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

Taxpayer Supporter of Nuclear Power for Electricity

Alan Smith

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

AREA I: CONSENT BASED SITING PROCESS.

1) How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

a) DOE PREPARATION:

i) When the final potential sites are selected:

(1) Identify the First Americans.

(2) Identify the first migration routes from the Eastern Seaboard.

(3) Identify the unresolved problems between the First Americans and the Current Americans.

ii) Identify the outcomes of health practices in the jurisdiction.

(1) Identify Tribal Health outcomes.

(2) Identify Current Health outcomes of Current Americans.

iii) Identify the number of Americans who lost their lives in the transport of spent nuclear fuel.

(1) How the person died.

(2) What happened to the spent fuel when the person died.

b) DOE PRESENTATION to local constituents:

- i) Why move the nuclear waste from near the reactors to this particular site?
 - ii) How will the nuclear waste be transported from the reactors to the interim site?
 - iii) Identify how the worst spent fuel transportation incident occurred, how it was mitigated, and by which governmental authority.
- 2) What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?
 - a) DOE PREPARATION:
 - i) Identify the role of previous governments in siting:
 - (1) Palo Verde
 - (a) Tribal
 - (b) State
 - (c) Local
 - (2) Sandia
 - (a) Tribal
 - (b) State
 - (c) Local
 - (3) Tennessee Valley Authority
 - (a) Tribal
 - (b) State
 - (c) Local
 - (4) Yucca Mountain
 - (a) Tribal
 - (b) State
 - (c) Local
 - ii) Identify each government's starting position and ending position.

- iii) In each case, cite the most difficult impasse that was resolved by compromise.
- b) DOE PRESENTATION to representatives from each government:
 - i) The ideal of American representation is that the trust of the people is firmly placed in their elected representatives.
 - ii) Discuss each one's experience with a governmental idea, how it was presented to their constituents, and the result.
- 3) What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?
 - a) DOE PREPERATION:
 - i) Cite benefits past governments had by engaging with DOE.
 - ii) Identify the opportunities the governments found or continue to find from previous DOE sites.
 - iii) Identify the amount of revenue collected from interim waste facilities such as hog farms ponds, tailings ponds, and precious metal mining waste facilities. Any kind of industrial waste regardless of federal jurisdiction and duration of storage.
 - b) DOE PRESENTATION to governments revenue officers:
 - i) BENEFITS:
 - (1) Construction work on new assets.
 - (2) Development of a new office within the local and Tribal governments.
 - (3) Collection of access fees.
 - ii) OPPORTUNITIES:
 - (1) Employment in traffic control, waste nuclear fuel inspections, janitors, food service, and more.
 - (2) Education in nuclear engineering that has potential to allow young students to develop a career that includes opportunity to work in all nuclear sites.
 - (3) Tax revenue from the fees paid by the businesses engaged in the industry.

4) What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

a) DOE PREPARATION:

- i) How did the DOE respond to the vote in the state of Oregon to shut down Trojan?
- ii) Identify the process of transport by trains gondolas of metals. It may be that this process of transporting and storing of the metals may have relevance to the process of offloading nuclear reactor fuel waste at the proposed interim site.
 - (1) Where is the rad level measured in the process?
 - (2) How long is the train stationary for rad measurement?
 - (3) Identify problems of backups in the off-loading of the metals after rad survey.

b) DOE PRESENTATION to representatives from each government:

- i) Discuss each participant's experience with all RAM.
- ii) Discuss each participant's source of knowledge for RAM effect on people. Anticipate the possible citation of nuclear reactor leaks, meltdowns, and nuclear weapons testing. The point is to let them get out their mistrust and fear of the transport and storage of nuclear reactor waste by using the only experience they have. Be prepared to hear about:
 - (1) Chernobyl
 - (2) Nagasaki
 - (3) Hiroshima
 - (4) Nevada tests
 - (5) Pacific Islands tests
- iii) BARRIERS:
 - (1) Ignorance of the exigent nature of reactor incidents versus transportation and storage incidents.
 - (2) Fear of radiation sickness.
- iv) IMPEDIMENTS:

- (1) Anti-nuclear activist messaging.
 - (2) Present real case radiation poisoning on communities physically closest to nuclear reactors.
 - (a) Cancer incidents.
 - (b) Birth defects.
 - (c) How the radiation was carried.
 - (3) Concern of the half-life of nuclear reactor waste for future generations.
 - (4) Anger over passing the waste onto the next generation, and the next, and the next...
- 5) How should the Department work with local communities to establish reasonable expectations plans concerning the duration of storage at federal interim storage facilities?
- a) DOE PREPERATION:
 - i) When Yucca and Sandia will be up and running.
 - ii) Why they are best suited for long term storage for tens of thousands of years.
 - iii) Future scenarios for storing nuclear fuel waste.
 - (1) Dumping all the waste into the deepest ocean trenches.
 - (2) Blasting the waste into the Sun.
 - iv) Any contractual language between DOE and governments regarding the duration of storage of spent nuclear fuel?
 - v) Create a survey to gauge reasonable expectations to duration.
 - b) DOE PRESENTATION to local constituents:
 - i) Cite how the expectations of communities living closest to nuclear reactors that now store the fuel waste, was determined.
 - ii) Present survey, and offer to conduct the door to door gathering of answers to survey questions to engage expectations of duration of storage at interim facility.
- 6) What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

- a) Neighborhood associations;
 - b) Civic centers;
 - c) Tribal medicine men and women;
 - d) Tribal story keepers;
 - e) Electrical energy unions;
 - f) Electrical energy company boards of directors;
- 7) What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?
- a) I think your questions just about cover Area I. Thank you.

AREA 2: REMOVING BARRIERS TO MEANINGFUL PARTICIPATION

- I) What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?
- a) Mistrust based on historical engagement with other Executive Branch agencies.
 - i) Mitigate by laying out the facts of nuclear waste;
 - ii) Cite a very large successful implementation by the DOE. Perhaps TVA?
 - iii) Find other siting processes that proves the DOE did what it said it was going to do.
 - iv) Contrast nuclear reactor fuel waste to the current waste produced by all other sources of power for generating electricity
 - (1) What form is the waste, solid, gas or liquid?
 - (2) Where is the waste going?
 - (3) Who are the people most affected?

- b) Ideations of Persecution by community leaders.
 - i) Ask each leader person to identify the persecution target.
 - ii) Ask each leader person when did the persecution start.
 - iii) Ask each leader person the result up to today of the persecution.
 - c) Above all develop an atmosphere of collegiality and not dominance.
- 2) What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?
- a) Bring the gift of running water and bathroom furniture to the First Americans;
 - b) bring the gift of the market for the ranchers and the farmers;
 - c) Institute a Free Zone, where discussion about the siting is the main topic. As soon as the rancor begins, break into small groups.
 - d) Always supply a dinner (lunch) bought from the best restaurants in the area. Be sure to include a woven table cloth.
 - e) Invite witnesses of nuclear detonations; if none are alive bring in a teacher from the area to run a module topic of human and nuclear materials interfaces.
 - f) A unit must include a detailed analysis of nuclear waste accidents.
- 3) How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?
- a) Work with the closest community college to review the Presentations for acceptance as college credit.
 - b) Sometimes ride horses to meet with constituents.
- 4) How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?
- a) All expenses paid Field trip to Yucca Mountain to show them long term storage facility.
 - b) Condemn Medium to Short Reactors. The technology is too new for this discussion.

- 5) What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?
 - a) Define the types of storage: short range; mid range and long range storage with examples of each.
 - b) Present as many news articles about each type of storage.
 - c) Focus on news stories from the communities that field the storage facilities.
 - d) Must engage with all types of news from local internet neighborhood pages, to school projects or articles, and to community meetings notes.

AREA 3: INTERIM STORAGE AS PART OF A WASTE MANAGEMENT SYSTEM

- 1) How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?
 - a) Compare and contrast current Waste Management Systems within each governmental body at proposed sites.
 - b) Which governmental body handles the nuclear waste in each?
 - c) How many accidents have occurred in the handling of nuclear waste, and coal, oil, and natural gas waste in each of proposed site?
 - d) <https://www.osti.gov/biblio/7193124>
 - i) Table 2 (for span 1991-1996)
 - (1) Nuclear Fuel Cycle had 50 incident reports
 - ii) Table 4
 - (1) What package type will be delivered to the interim site?
 - iii) Table 5
 - (1) In the period of time from 1971 through 1990...180,000 hazmat incidents..."

- (a) At the levels of reporting in (a), for 1971-1996, calculated the number of hazmat incidents
“would have been approximately 234,000...”
 - (b) “...for the period of 1971 through 1996...1828 of these reports involved RAM...”
 - (c) “RAM were only 0.8 percent of reported incidents...”
 - (d) Of that 0.8 percent how many were spent fuel?
- 2) What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?
 - a) All waste disposal is a drawback, but necessary for public health.
 - b) Review Palo Verde current operations with the original engineering plans for waste expansion disposition.
 - c) Did the plan include additional nuclear reactor capacity in its original plans? Is the original expansion plan still relevant today?
 - d) Can there be a dedicated zone for destruction of bio-hazardous waste at Palo Verde?
 - e) Review the munitions sites in Oregon and Utah. Those waste receptacles are well secured from outside nefarious individuals. Show how DoE will afford the same or better security.
 - f) Will DOE repurpose or demolish the interim site?
 - g) Provide plans for future demolition of the interim storage facilities.
 - h) Review the working strategy of the old MX Missile network. What worked what did not work in the consideration of storing the materials used in the explosive part of the missile? Are there dedicated railroad tracks not being used? Can those be incorporated in the discussion for interim siting?
 - i) WMS as currently designed utilizes local governments to provide safe transportation and disposal of household waste. The benefit of combining recycling receptacles and landfill receptacles on one neighborhood route is simplicity for the WMS provider.
 - j) The drawback of combining types of waste is backup traffic. Idle trains waiting to deposit nuclear waste packaging could be an accident waiting to happen.

- k) RAM has to be treated as its own material like waste from any other source of energy.
 - l) Co-locating RAM waste with WMS that includes landfill and recyclable materials is out of the question.
 - m) Co-locating RAM waste with industrial animal waste ponds should be investigated.
 - n) Co-locating RAM waste with mining tails ponds should be investigated.
 - o) Co-locating RAM waste with oil, coal and natural gas waste is out of the question.
- 3) To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?
- a) The interim storage facility should be short term and include nimble transfer of packaging for safe transport of RAM to the permanent repository.
- 4) What other issues should the Department consider in developing a waste management system?
- a) Identify assets the DOE plan to add to each of the government's jurisdictions in the proposed sites.
 - b) Propose the creation of a Nuclear spent fuel administrative structure to the local government's assets.
 - c) Pay the local government to establish their own nuclear spent fuel security team.
 - d) Flood the volunteer counties with cash.
 - e) Perhaps even experiment with using gold coins.

From: Mitch Arvidson

Sent: Friday, March 4, 2022 7:07 AM

To: Consent Based Siting

Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage - MRMTC Response

Attachments: Final_MRMTC Response to RFI on Consent-Based Siting and Federal Interim Storage.pdf

Hello U.S. Department of Energy Office of Nuclear Energy (DOE-NE) Office of Spent Fuel and Waste Disposition,

Please find attached the Midwestern Radioactive Materials Transportation Committee's (MRMTC) response to the Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities. Any questions about the committee's response should be directed to Mitch Arvidson. Thank you for the opportunity to provide the committee's input on this important topic.

Sincerely,

Mitch Arvidson

Program Manager

The Council of State Governments Midwestern Office

[REDACTED]

MARK YOUR CALENDARS!



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The Honorable Dr. Kathryn Huff
Senior Advisor, Office of the Secretary
U.S. Department of Energy (DOE)

701 East 22nd Street
Suite 110
Lombard, Illinois 60148
Tel: 630.925.1922
Fax: 630.925.1930
E-mail: csgm@csg.org
www.csgmidwest.org

Dear Dr. Huff:

This response to the “Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities” is written on behalf of the members of the [Midwestern Radioactive Materials Transportation Committee \(MRMTC\)](#). Inquiries about this response should be directed to Mitch Arvidson.

Michael H. McCabe
Regional Director

Mitch Arvidson



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1776 Avenue of the States
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444 North Capitol Street, NW
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Tel: 202.624.5460

The MRMTC was organized in 1989 and brings the Midwestern states together to identify, prioritize, and work with DOE to resolve regional issues related to the department’s transport of radioactive waste and materials, including spent nuclear fuel (SNF). The committee originally focused on the future shipments planned by the DOE Office of Civilian Radioactive Waste Management (OCRWM). Since 1998, however, the committee has also worked with the DOE Office of Environmental Management (EM) to address shipments of waste resulting from the cleanup of former defense plants. The committee also continues to work closely with the DOE Office of Nuclear Energy (NE) on issues of SNF shipments to one or more interim storage facilities and/or a final repository. Committee members from states on the shipping routes have worked with the DOE to plan several shipping campaigns involving transuranic (TRU) waste and SNF traveling through the Midwest. The committee comprises of representatives from the executive and legislative branches of government in 12 Midwestern states: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. The committee is the primary forum through which the Midwestern states have been, and will continue to be, involved in planning and preparing for DOE’s shipments.

The MRMTC is responding to this RFI in order to capture the thoughts, ideas, and suggestions of state government officials who will be responsible for protecting the health and safety of constituents during shipments of SNF that would result from the eventual siting of one or more federal interim storage facilities. Additionally, states have their own regulations and are co-regulators of radioactive materials transportation. Furthermore, state governments are important stakeholders who must be deeply involved in a consent-based siting process.

Since the MRMTC's scope is mostly focused on the transportation of radioactive materials, including SNF, this document will not answer some of the RFI's questions that the committee believes cannot be related to transportation.

Area 1: Consent-Based Siting Process

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Although the roles of tribal, state, and local government and officials will likely be extensive in determining consent for a community to host one or more federal interim storage facilities, the MRMTC's focus is on the transportation concerns surrounding the consent-based siting process. Within this limited scope, the primary role of these governmental organizations or officials is the protection of the health and safety of their constituents and environment during transportation of SNF to an interim storage facility, and subsequently to a permanent disposal facility at some point in the future. These governmental organizations or officials are also co-regulators of radioactive materials shipments with the federal government. Without reasonable assurance that the health and safety of the community is being made a priority, consent is unlikely at best.

Regional and tribal transportation groups like the MRMTC and the [Tribal Radioactive Materials Transportation Committee \(TRMTC\)](#), along with federal organizations like the [National Transportation Stakeholders Forum \(NTSF\)](#) have been assembled to identify and help resolve issues relating to the transportation of radioactive materials, including SNF, through their jurisdictions. These groups provide a valuable resource for tribal, state, and local governments and officials to take advantage of when assessing the health and safety concerns of their constituents brought about by the transportation of SNF to one or more potential interim storage facilities.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

The Department's continued and enhanced participation with state regional groups (SRG) like the MRMTC, tribal organizations like TRMTC, and national organizations like the NTSF could encourage local, state, and tribal governments to consider engaging with the Department as it works to identify federal interim storage sites. These organizations host meetings regularly that provide a great forum for information sharing and open communication. Through consistent participation in these forums, the Department can develop goodwill and strong professional relationships with important local, state, and tribal government officials who could then be more willing to engage on consent-based siting initiatives.

Furthermore, the Department's funding of organizations like the MRMTC allows for continued state-level collaboration with the Department. Funding also allows for state government stakeholders to attend meetings, exercises, trainings, and conferences they would not otherwise be able to attend. This deepens the knowledge and understanding of radioactive materials and their transportation throughout the nation and could allow for more fact-based, informed engagement on consent-based siting initiatives.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

The National Academy of Sciences' (NAS) 2006 report [*Going the Distance? The Safe Transport of Spent Nuclear Fuel and High-Level Radioactive Waste in the United States*](#) concluded that there are “no fundamental technical barriers to the safe transport of spent nuclear fuel and high-level radioactive waste in the United States.” However, the report did recognize that “social and institutional challenges” for a large-scale SNF transportation campaign will need to be addressed prior to the campaign’s genesis. The MRMTC believes that the consent-based siting process will, without question, be closely tied to the transportation of SNF and a subset of stakeholders will attempt to envelope their perceived risk(s) of SNF transportation into the consent-based process, which could prove as a siting impediment.

Although it is understandable and expected for stakeholders to have concerns about SNF transportation, this should not be coupled with consent-based siting as it may lead to the misconception that transportation is consent-based. Federal laws and regulations governing transportation of hazardous materials, including SNF, unequivocally identifies the authority provided to local and state entities for regulating hazardous materials transportation. As such, the DOE should strive to clearly delineate and demarcate the boundaries of the consent-based siting process to ensure that transportation, though an important part of the waste management system, is outside of a consent-based process.

The [*Blue Ribbon Commission on America’s Nuclear Future Report to the Secretary of Energy*](#) stated, “Collaboration through the SRGs has proved important, not only because states have primary responsibility for protecting the health and safety of their citizens, but because they share (and sometimes disagree about) common concerns. Bringing corridor jurisdictions together under the auspices of these groups allows issues to be identified and resolved by all parties.” Further, the NAS’ report recommended that “DOE should continue to ensure systematic involvement of states and tribal governments in decisions about routing and scheduling for current spent fuel shipments.” The MRMTC agrees that SNF transportation has been, and will continue to be, conducted safely and securely and that states, as co-regulators of radioactive materials transportation, play an important role in the process. The MRMTC believes DOE’s continued support and engagement with the SRGs will continue to provide a conduit to stakeholders at the state and local levels in order to adjudicate, to the extent practical, social and institutional challenges for the transportation of SNF within their jurisdictions.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

The Department should consider continuing and deepening its partnership with SRGs like the MRMTC, tribal organizations like TRMTC, and national organizations like the NTSF to develop a consent-based approach to siting.

Furthermore, the Department should consider partnering with some of the parent organizations to these groups. For example, the MRMTC is staffed by the Council of State Governments (CSG) Midwest, which also staffs the [*Midwestern Legislative Conference \(MLC\)*](#). The MLC is a nonpartisan association of all legislators representing 11 states: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Nebraska,

North Dakota, Ohio, South Dakota, and Wisconsin. The purpose of the MLC is to foster cooperation among the region's policymakers through the consideration of common problems, the exchange of information and ideas, the sharing of knowledge, and the pursuit of collaborative efforts to improve state government. Few, if any, other venues provide as great of an opportunity to communicate with state policymakers as the MLC does.

7. What other issues, including those raised in the Draft Consent-Based Siting Process, should the Department consider in implementing a consent-based siting process?

The initial public engagement phase of the Department's consent-based siting initiative included "Continuing interactions with the National Transportation Stakeholders Forum (NTSF) and several ad hoc working groups associated with NTSF, the Transportation Core Group, state and regional groups, and the Tribal Caucus." The MRMTC believes that these interactions should continue, and we stand ready to lend our support as the siting process continues.

Area 2: Removing Barriers to Meaningful Participation

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

SRGs like the MRMTC, tribal organizations like TRMTC, and national organizations like the NTSF consist of state, tribal, and federal representatives with expertise in the transportation of radioactive materials. They should be considered a primary resource for not only interested communities, but for communities potentially impacted by the transport of SNF, to address consent-based siting transportation questions and concerns. Through organizational websites, publicly accessible documents, and regular meetings, these groups provide a wealth of information and expert assistance to communities that should allow for more meaningful participation in the consent-based siting process.

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

In 1989, the DOE established a cooperative agreement with the four SRGs for the purpose of working with the states on planning for shipments of SNF to Yucca Mountain. Since that time, the states and DOE have continued to work collaboratively on multiple DOE transportation programs including, but not limited to, Yucca Mountain, the Foreign Research Reactor Spent Nuclear Fuel Acceptance Program, and the Waste Isolation Pilot Plant (WIPP).

In 2010, the DOE created the NTSF. As stated in its Charter, the NTSF "is the mechanism through which DOE engages at a national level with states, Tribes, federal agencies and other interested stakeholders about the Department's shipments of radioactive waste and materials, as well as occasional high-visibility shipments that are nonradioactive. The purpose of the NTSF is to bring transparency, openness, and accountability to DOE's offsite transportation activities through collaboration with state and tribal governments. DOE will work through existing agreements and networks to ensure federal, state, and tribal government participation." As a result of DOE's active engagement with states and Tribes,

stakeholders have been able to work directly with the DOE and other federal agencies to address concerns, provide programmatic and regulatory input, and help identify emergent issues.

Another important program that continues to help local stakeholders to learn and prepare for DOE radioactive material shipments is DOE's Transportation Emergency Preparedness Program (TEPP). The TEPP provides technical assistance to state and tribal governments in obtaining a greater understanding of radiological risks, identifying planning deficiencies, updating plans, training first responders, and simulating and testing the system for strengths and needed improvements. TEPP was developed through the collaborative work of DOE and the Transportation Working Group, a predecessor to the NTSF.

Again, the MRMTC agrees that SNF transportation has been, and will continue to be, conducted safely and securely and that states, as co-regulators of transportation, play an important role in the process. The MRMTC believes DOE's continued support and engagement with the SRGs will continue to provide a conduit to stakeholders at the state and local levels in order to adjudicate, to the extent practical, the social and institutional challenges for the transportation of SNF within their jurisdictions.

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

See answer to Area 1's third question.

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

The transportation of SNF will impact many communities through which the SNF must pass to reach the federal interim storage facilities. Advanced communication to affected communities along with educational material on radiation and the safe history of transporting radioactive material will be critical. Training opportunities for local first responders will help alleviate concerns.

Area 3: Interim Storage as Part of a Waste Management System

4. What other issues should the Department consider in developing a waste management system?

With interim storage being just one piece of the overall integrated waste management system, the Department will obviously need to consider all aspects of the management system. The component of an overall waste management system that will impact the largest number of individuals and communities is the transportation piece. Movement of these materials to and, eventually, from an interim storage facility to a permanent disposal site will likely be a high profile and contentious undertaking.

While consent may be given by a host community for the placement of an interim storage facility, buy-in from non-host communities potentially impacted by the transportation of these materials may prove to be difficult. Particularly, if there is not an obvious economic benefit to the impacted communities. As stated earlier, the MRMTC believes that SNF transportation does not need to receive consent from

every community along the transportation route. However, the Department should strive to inform and communicate with these communities ahead of shipments.

Transportation planning discussions should occur early on in the consent-based siting process to identify potential issues and to help avoid costly delays later due to unforeseen tribal, state, or local community concerns. SRGs and tribal organizations like the MRMTC and TRMTC have pre-established connections with the state, tribal, and local communities, as well as knowledge of the relevant regulations, established routes, transportation infrastructure, inspection and escort requirements, and emergency response capabilities that should be utilized by the Department to help facilitate these transportation related discussions.

In summary, the MRMTC believes that the best way for the DOE to address the transportation aspects of a consent-based siting process to identify federal interim storage facilities is to participate in, and fund, SRGs like the MRMTC, tribal groups like TRMTC, and national organizations like the NTSF. Additionally, the MRMTC stresses the importance of consultation and communication with state governments about radioactive materials shipments, including SNF. State governments are co-regulators of these shipments, and they are responsible for the health and safety of their constituents. While consultation and communication are important and recommended, the MRMTC believes that consent from all communities along shipping routes is neither required, nor should be sought, for radioactive materials shipping campaigns.

Sincerely,

Michael Snee

Michael Snee, Co-Chair

CSG Midwestern Radioactive Materials

Transportation Committee

Rodney Pitchford

Rodney Pitchford, Co-Chair

CSG Midwestern Radioactive Materials

Transportation Committee

From: Dan Solitz
Sent: Friday, March 4, 2022 7:06 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI:Consent-Based Siting and Federal Interim Storage
Attachments: INTEREM SNF STORAGE_220304_185206.pdf

Hello all:

Attached please find my comments. I also participated in the formulation of Oregon Department of Energy comments and heartily support them
Wishing all the best in this important initiative
Respectful submitted
Dan

[Sent from Yahoo Mail on Android](#)

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In the matter of Draft Consent Based Siting Process For Consolidated Storage and Disposal Facility for Spent Nuclear Fuel and High Level Radioactive Waste

Dan Solitz- private citizen

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Area 3 question 4

I have had three one year or longer experiences with consensus and think it is an excellent process especially for contentions decisions. I recommend it enthusiastically for the US DOE folks that are pursuing this initiative. Use it internally to guide yourselves in setting up consensus decision to site an interim consolidated storage facility and hopefully a future deep geologic repository.

What other issues should the Department consider in developing a waste management system?

The last question should be first and that is, should the fuel be moved twice?

Not sure it should be a public process but would like to see evidence of a study comparing the potential damage and recovery from sabotage to an Independent Spent Fuel Storage and a away from reactor consolidated storage. This question should take precedents over land usage at former reactor sites. If a credible attacks were to happen how would

the spent fuel of the site and location affect the recovery and damage to surrounding area(s) and population?

In order understand and conduct consensus processes the folks doing this should conduct their own business via consensus.

Area 1 question 1

How should the Department build considerations of social equity and environmental justice into a consent- based siting process?

The Blue Ribbon Commission on America's Nuclear Future explored two areas of social equity, one, intraregional, so you might want to consider more than one site and dispersed regionally. And this may also reduce transportation concerns. And two, Intergenerational, simple, get it done while the folks enjoyed the electricity are still alive. As for

Environmental Justice -do it right, have the performance analysis to prove it. A preliminary step should be to gather a consensus based group of subject matter experts and interested members of the general population at a dozen diverse locations throughout the country, without a site in mind, to consent on siting criteria specific to social equity and environmental justice. A dry run could begin sooner as site characteristics would not be needed and the outcome might have a useful influence on site characterization and selection of potential candidate sites.

Question 2

Well it's consensus so so it needs to be equal. Question 2

should be the first order of business at the first meeting "What role should Tribal, State, and local officials and governments play in consenting to siting". Get consensus on this first, also all parties need to feel assured the site is sound, and that the state is up to the regulatory demands of such a facility and that they all will not be unfairly burdened, and that it is truly interim. A hot cell co-located to deal with ageing Spent Fuel management issues would offer some assurance particularly for high burn up fuel. And that recaskting for final disposal can be done expeditiously.

Question 3

Interim is the key. It may not be enough to point to the success of Finland and Sweden on the road to deep geologic disposal. Congress may need to pass a law such that if after time certain, say fifty years, if deep geologic is not available the spent fuel will be returned to the generator.

Speaking of other countries be thorough in your presentations like the Swedes and Fins not like the Canadians

Once geologically suitable candidate sites have been identified, a suite of sites that are geographical dispers and ideally in the same region as the reactors should be publicize Nationaly to the relevant Tribes and local government officials simultaneously. Then ask relevant Tribes and government officials what do you need and want to take this on?

Question 4 Barriers or Impediments

Ask yourselves how trusted is the DOE. What can the DOE do to enhance trust. Look at recent incidents for example the WIPP fires and recovery, talk about lessons learned. Be honest about the expansion of the ventilation system and DOE's intent to expand WIPP's capacity beyond the limit of the land withdrawal act. If you want to be trusted you have to be honest

Is this necessary, explain in plain language why consolidated interim storage is necessary. Because it is beneficial to the owners of the property where spent fuel currently resides is not a compelling argument. Call out the National good to a first step to permanent disposal. Explain the security, reassure the public that a eighty two Nun could not gain access because this will be treated as a serious nuclear facility. The security staff will periodically exchange visits with other nuclear facilities and formally grade each other on equipment and procedures.

Question 6 Other organizations to partner with

Two national good government organizations come to mind
Common Cause and league of Women Voters

Area2 meaningful participation

The process at the local level would benefit from high quality internet access.

Meetings should be televised, interactive and recorded simultaneously with being public in person.

A staffed reading room containing all relevant documents open after normal working hours would enhance openness and accessibility.

The likely sites will probably be rural so a car pooling coordinator or a van and driver would help turn out

Have a potluck after the meetings, generally speaking people who eat together argue less.

Maximize opportunities for mutual learning

Watch old videos and current meetings of relevant Nuclear Waste Technical Review Board meetings and discuss afterwards.

From: Chelsi Sparti
Sent: Friday, March 4, 2022 2:00 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: Sparti_Consent-Based Disposal.pdf

See attached letter.

Chelsi Sparti (she/her)
Graduate Student MS '23, Energy & Resources Group
University of California, Berkeley, [Unceded Ohlone Lands](#)

[REDACTED]

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Chelsi Sparti
UC Berkeley
Energy and Resources Group



Submitted by email to: consentbasedsiting@hq.doe.gov
Subject line “RFI: Consent-Based Siting and Federal Interim Storage.”

March 4, 2022

To Whom It May Concern:

In this letter I’m speaking from my professional expertise and personal opinions that do not reflect the position of any of the groups I am part of.

Area 1: Consent-Based Siting Process

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

Federal agencies like Department of Energy could improve consent-based processes by first thinking about storage cask design life. Currently, many dry storage casks used in U.S have a design life of around 60-years, in optimal environmental conditions. Most U.S. nuclear power plant sites do not meet any measure of optimal environmental conditions. The San Onofre Task Force (“Task Force”), led by Rep. Mike Levin (CA-49), studied these topics at length.

Unless more thought is paid to a longer timeline, it will remain challenging to find a consent-based permanent disposal site. This is due to the short-term thinking by utilities who make the radioactive waste storage decisions by choosing the models of casks and waste storage facilities at-reactor sites. Most utilities have opted for low-quality storage casks with a limited 60-year design life.

These utility decisions create a cascade of problems. The Task Force report identifies that lack of sensitive cask breach detection and proven damage to storage casks at-reactors can pose challenges to off-site storage.

The Task Force identified issues with the Holtec HI-STORM UMAX storage facility, a new design used at only two existing nuclear plants – San Onofre in California and Callaway in Missouri. The Holtec HI-STORM UMAX storage facility for radioactive waste is flawed and is not a useful design for any of the nation’s high-level radioactive waste. DOE officials and staff ought to further study impacts of scratching, gouging, and carbon steel contamination from the partially below-grade silo design of the Holtec HI-STORM UMAX facility.

Area 1: Consent-Based Siting Process

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

Instead of looking to U.S. organizations, the DOE ought to explore the successes of European countries. Some organizations that have made progress on high-level radioactive waste disposal include: Posiva of Finland, Zwiilag of Switzerland, Forsmark of Sweden, and ENRESA of Spain.

Area 1: Consent-Based Siting Process

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

Creating more meaningful and authentic collaborations with Tribal Nations is possible. It begins when the Federal Government cedes leadership to the Peoples who have managed the land since time immemorial.

Indigenous Peoples value reciprocity and long-term thinking that considers and honors generations of ancestors and generations of life yet to come. DOE, and other agencies, can gain potential new approaches to the problems of radioactive waste storage by creating leadership spaces for Indigenous folks to share traditions, Native science, Tribal objectives, and long-term resource care approaches. A place to start could be co-creating a new approach to structuring consent meetings, with Tribal Council leaders defining the meeting structure.

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

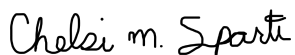
Nuclear power plants now serve as interim waste storage sites in the U.S. It is too low a goal to work towards consolidated interim storage. The only environmentally just approach is to begin the consent-based siting of a permanent disposal site. Interim sites, such as the flawed Holtec HI-STORM UMAX facility are not the answer. They create more problems than they solve by damaging storage casks and preventing adequate radiation monitoring, breach detection, and cask repair.

DOE ought to begin studying immediate repair and replacement procedures for the existing high-level radioactive waste storage canisters, to ensure safe transport, and eventual disposal. This approach ensures the integrity of the high-level of radioactive waste will be maintained, in order to aid permanent disposal in a geologic repository.

Co-locating radioactive waste storage with clean energy technologies or other waste management poses immediate and long-term potential harms to the equipment due to radiation contamination. Before any plans are approved, extensive study of heat, radiation, national security (i.e. potential targeting of assets in acts of malfeasance) must be carried out.

Transparency is key. Without transparency, the consent-based process becomes little more than a bribe to pollute land, water and air for millions of years.

Sincerely,



Chelsi Sparti

From: Ward Sproat
Sent: Friday, December 10, 2021 12:18 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-based Siting and Federal Interim Storage
Attachments: Responses to US DOE RFI on Using a Consent.pdf

The attached are my responses to the subject RFI.

Ward Sproat

<<...>>

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Responses to US DOE RFI on Using a Consent-Based Siting Process
To Identify Federal Interim Storage Facilities

Contact Name:

Hon. Edward F Sproat III

Former Director, Office of Civilian Radioactive Waste Management (OCRWM)

US Department of Energy

Contact Information:

[REDACTED]

[REDACTED]

[REDACTED]

Response:

As the last Senate-Confirmed Director of OCRWM, I have a very deep understanding of both the technical and political issues surrounding the disposition of spent nuclear fuel. During my tenure as Director, I met with two Governors of Nevada, one Nevada Senator, a number of Nevada state officials and county and tribal leaders representing the Affected Units of Local Governments. I also was a witness in at least six Congressional hearings on Yucca Mountain and the Nuclear Waste Policy Act.

The following responses are based on my experiences and learnings during my tenure from June 2006 to January 2009 and are consistent with my testimony before the President's Blue Ribbon Commission on America's Nuclear Future in 2011.

Area 1: Consent-Based Siting Process

Question #2: What role should Tribal, State and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Answer:

The simple answer to this question is for the federal government to start discussions at the state level first. The failures to progress the Yucca Mountain site to the licensing hearing phase, the failure of the Private Fuel Storage (PFS) project in Utah and the latest opposition to the proposed private storage project in Texas are all due to political opposition at the State level, not the local level. Because the siting and licensing

process will extended over at least a decade, the political office holders will change over that period. Even if an initial willingness is expressed to host a facility, the state leader incumbents are likely to change before the facility is completed leading to a potential withdrawal of consent. It is therefore imperative that a Federal-State legal agreement or state legislation authorizing the project to proceed within that state and under what conditions be in place prior to expending federal funds on the development of the facility. Once that is in place, discussions with local units of government in locations that have the appropriate requisite access to transportation infrastructure and geologic characteristics can begin.

Question #4: What are the barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

Answer:

There are two primary barriers to making the consent-based siting process work: Time and Site Adequacy.

Regarding time as a barrier, the time needed to build consensus, evaluate potential sites, design and license a facility and determine transportation routes is long, at least ten and probably closer to 15-20 years. Over this time, players who are needed to maintain their consent will change, probably several times as local elections are held as will the political, social and community entities that will want to be involved.

Regarding site adequacy, not every location where consent might be achieved will be suitable for a storage facility or permanent repository. The geological features must meet certain regulatory criteria and adequate transportation infrastructure must be accessible and in place to allow transport of spent fuel canisters via road or rail or both. The transportation routes will expand the number of entities that will want to have a say in the siting beyond local entities at the site. The opposition of entities on the transportation routes is what killed the PFS project.

I'm not convinced that these barriers can be adequately addressed. But if I were to try, the following strategy would be where I would start:

- Use existing DOE studies to narrow down the potential states and locations in those states that have adequate geological characteristics and transportation infrastructure to host a facility.
- Begin discussions at a high level between the state governments and the federal government on interest and potential conditions to putting a legal agreement or legislation in place authorizing an interim facility in that state.
- Negotiate a binding agreement which clearly states the conditions of moving forward in that state including what involvement and consent is required, by whom and by when for the different stages of the project.

Area 3: Interim Storage as Part of a Waste Management System

Question #3: To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

Answer:

It will be extremely difficult if not impossible to proceed with interim storage in any state unless there is some certainty regarding how long the spent fuel will remain in that state. State and local political leaders will not put themselves in a position of having to defend a decision to support interim storage when they can't define the duration of an interim period. They know that DOE can't guarantee a specific date by which spent fuel will be removed until and unless a permanent repository is in operation and the contractual issue of what spent fuel stands where in the receipt and shipping que is resolved.

Question #4: What other issues should the Department consider in developing a waste management system?

Answer:

The Department has developed, sponsored and reviewed numerous studies on this topic over the last 30 years. It should undertake an internal review of all of these studies and make a determination of which of the recommended actions it should sponsor in new legislation to give it the authority it needs to execute its mission and provide a workable solution to the spent fuel disposition issue.

There are several issues which are essential to address if any progress is to be made:

- **Access to the Nuclear Waste Fund (NWF):** The classification of the disbursements of the NWF as Discretionary made the funding of the program subject to the political whims of the annual appropriations process. Studies have recommended potential fixes for this problem. Any long-term capital intensive project cannot be successful unless the management has control of and assurance of the availability of the funding for the cash flow needed to execute to its schedule and contracts.
- **Longevity of Management:** The ability to attract and retain experienced managers and leaders is essential for any long-term project or program. The structure of OCRWM within DOE proved to be less than adequate in this regard. The Director as a political appointee had a very short tenure and the duration of the confirmation process discourages almost all qualified candidates from agreeing to be considered. Compensation for the senior management team needs to be commensurate with the private sector in order to attract and retain qualified managers.
- **Independence of the Responsible Organization:** The long-term strategies, plans and budgets of the organization responsible for managing the waste management system need to be independent of the shifting political landscape

that occurs every two years with a new Congress. Several of the aforementioned studies provide potential solutions to this issue. One should be selected and implemented via legislation.

- Determine the number of interim storage sites and repositories required: Until the number of sites required is determined, there will be no target for the program managers to shoot for. The Department completed a published study in 2008 on the adequacy of the Yucca Mountain design to accommodate more than the authorized amount of spent fuel. That study should be reviewed and updated to show if the conclusion of that report that Yucca Mountain can adequately hold all spent nuclear fuel is still valid.
- Determine the adequacy of the Nuclear Waste Fund: The Department completed and published a study in 2008 on the adequacy of the NWF to fund the construction and operation of the Yucca Mountain Repository. Since that time, a number of inputs to that study have changed, not the least of which is the stoppage of collection of the fee from nuclear waste generators. It is almost certain that the NWF does not have sufficient funds to build one or more interim storage sites and a repository and transport spent fuel between them.
- Finish the adjudication of the Yucca Mountain License Application: The potentially shortest and least costly near-term path to progress is to proceed with the adjudicatory hearings with the US Nuclear Regulatory Commission (NRC) on the already submitted Yucca Mountain license application. NRC staff review has been completed and their Safety Evaluation Report Issued. The remaining costs of concluding these hearings and getting a final NRC decision on the adequacy of Yucca Mountain as the nation's high level waste repository are miniscule when compared to the sunk costs already incurred and the costs of starting over. Once the hearings are concluded and the final determination is made by the NRC, the nation will know whether or not Yucca Mountain is a viable solution. If not, then start over. If so, proceed to figure out how to break the political logjam and address the issues listed above.

From: Dan Sr
Sent: Saturday, February 19, 2022 10:00 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

If past is prelude, we can expect "interim" storage to become permanent. This could be for the best as multiple transportation of nuclear wastes should be avoided.

Therefore, the label of "interim storage" should indicate the likely permanence of this process. The only incentive for residents to approve of near-by storage would be financial. How much would it cost to buy acceptance of risk? and how can that risk be determined?

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From: Ann Suellentrop
Sent: Thursday, February 3, 2022 1:48 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

From: Ann Suellentrop MS RN
Physicians for Social Responsibility- Kansas City

The most serious and inevitable risk if the U.S. Department of Energy were to take ownership of commercial highly radioactive nuclear waste before a permanent geologic repository opens: federal Consolidated Interim Storage Facilities would likely become Consolidated Permanent Surface Storage, that is, de facto Above-Ground Permanent Disposal, or Parking Lot Dumps. This is putting the cart before the horse. There is no guarantee that a permanent storage facility will ever be found. There are no nuclear power plants in New Mexico. There is no reason New Mexico should host the nation's nuclear power plant waste and become a sacrifice zone. The state is already polluted from Los Alamos National Laboratory and there is already a nuclear storage facility, WIPP.

A Consolidated Interim Storage Facility in New Mexico would also create the possibility of spills and accidents of radioactive waste along the way. Kansas City, a major transportation hub, would likely be at higher risk. I live within a few miles of major highways and train routes. It would be best to keep the waste at the sites where it was created in hardened onsite storage. Not only would this be safer in most cases, but it would keep the financial responsibility where it belongs - on the companies which created it, not the US taxpayers.

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From: John Tanner

Sent: Saturday, February 5, 2022 8:53 AM

To: Consent Based Siting

CC: Sabharwall, Piyush; Boring, Ronald Laurids; 'Bob Skinner'; Reichenberger, Michael Anthony; 'Marty Sattison'; 'Roger Mayes'; DeHart, Mark David

Subject: [EXTERNAL] Area 3 number 3

[REDACTED]

I believe Idaho Congressman Mike Simpson is correct in stating that there will be no interim storage of spent fuel until there is very good progress on permanent disposal of it. The unsuccessful attempts of Holtec to establish an interim storage facility in New Mexico and the attempt to use the low level waste facility in Texas for interim storage of spent fuel are examples of this.

I suggest that the DOE begin with consent based permanent disposal of spent fuel and work on interim storage later.

John Tanner, [REDACTED]
[REDACTED]

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From: TC

Sent: Tuesday, March 1, 2022 8:20 AM

To: Consent Based Siting

Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sent from my iPad

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From: Carla Tevelow
Sent: Saturday, February 26, 2022 7:15 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Carla Tevelow

This message does not originate from a known Department of Energy email system.
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From: Tami Thatcher
Sent: Wednesday, March 2, 2022 11:02 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: ConsentBased2022comment.pdf

Comment submittal from Tami Thatcher of Idaho Falls, Idaho

On

RFI: Consent-Based Siting and Federal Interim Storage

If required, I can provide my home address and phone number, however, I decline to include those in my comments.

Never before has the DOE requested this information be included in a comment submittal and I do not intend to rely on DOE's redaction to remove such information for my comment submittal.

I do not see the Department of Energy employees having to place their home addresses and phone numbers online with the RFI request. It was an entirely outrageous request by the Department of Energy, uniquely in this public comment, "Request for Information" action.

Sincerely,

Tami Thatcher

Also, please inform me that you have obtained my comment submittal.

Other agencies such as the NRC have automatic comment receipt notification.

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

Public Comment Submittal on the U.S. Department of Energy’s Request for Information (RFI) on Consent-Based Siting and Federal Interim Storage

Comment submittal by Tami Thatcher, March 2, 2022.

Comments Due: March 4, 2022. Sent by email to consentbasedsiting@hq.doe.gov

Instructions say to include “RFI: Consent-Based Siting and Federal Interim Storage” in the subject line of the email.

Unlike previous DOE comment opportunities, this DOE public comment opportunity requested the submitter’s address and phone number and email all to be made public. I will not place my email, address or phone number in these comments, and then ask DOE to redact them. I don’t see DOE placing their home phone numbers, addresses and emails on their documents. The DOE’s request for phone numbers and home addresses and their intention to make this information publicly available, online, shows its commitment to seeking to dissuade citizens from commenting. Other agencies collect that information but do not make it publicly available. I will, if required, provide the requested information in separate correspondence to DOE, not to be made public. The DOE’s RFI is highly flawed right from the beginning.

BACKGROUND

The Office of Nuclear Energy (NE), U.S. Department of Energy (DOE) has requested information on how to site Federal facilities for the temporary, consolidated storage of spent nuclear fuel using a consent-based approach. “DOE anticipates that communities; governments at the local, State, and Tribal levels; members of the public; energy and environmental justice groups; organizations or corporations; and other stakeholders may be interested in responding to this Request for Information (RFI). We especially welcome insight from people, communities, and groups that have historically not been well-represented in these discussions. Responses to the RFI will inform development of a consent-based siting process, overall strategy for an integrated waste management system, and possibly a funding opportunity.”^{1 2}

In 2016, DOE asked for public comment on a consent-based process for siting storage or disposal facilities. The DOE then removed its online documentation of the public comments the agency collected.

Now, in 2022, the Department of Energy has made no progress on siting one or several needed spent nuclear fuel repositories. The Department of Energy is seeking any way possible to make it appear that it is making progress on the growing nuclear waste problem. Any progress

¹ Department of Energy Federal Register Notice, “Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities, December 1, 2021.
<https://www.federalregister.gov/documents/2021/12/01/2021-25724/notice-of-request-for-information-rfi-on-using-a-consent-based-siting-process-to-identify-federal>

² See also <https://www.regulations.gov/document/DOE-HQ-2021-0032-0001>

toward the consolidated “interim” storage of spent nuclear fuel in some sparsely populated region of the country might appear as progress. The DOE is seeking communities that can be bribed into accepting the “interim” storage of spent nuclear fuel (and high-level waste) until a permanent disposal option can be obtained.

SUMMARY OF MY COMMENTS

First of all, the siting of spent nuclear fuel and high-level waste at “interim” storage facilities must be based on *informed* consent, and not *misinformed* consent. That would mean the Department of Energy has to tell the truth about the technical difficulties of achieving a disposal facility in addition to acknowledging the problems of gaining public acceptance. That would mean being truthful about what “interim” storage means – which may mean ‘forever.’

It is highly likely that the design life of the interim storage facility will be exceeded because the spent fuel will have no place to go should a permanent repository not be available. And before the design life of the “interim” storage facility is exceeded, it is known that at least some of the stainless steel spent fuel canisters that are susceptible to chloride-induced stress corrosion cracking and other degradation mechanisms likely will have breached their containers. At a minimum, radioactive gases will be released to the atmosphere. There is currently no method for containing a breached spent fuel canister, no way of repairing a canister and no way to transfer the spent fuel from a compromised canister to another canister. The NRC claims that its regulations will still be met, although this may require the public to evacuate.

Informed consent would mean telling the truth about adverse health effects from radiation exposure. It would require explaining the many ways that the Department of Energy’s and the U.S. Nuclear Regulatory Commission’s accepted radiation protection standards do not adequately protect human health, neither the public’s nor radiation workers.

The grave danger posed by failure to isolate the spent nuclear fuel and high-level waste from the air, soil and water for millennia must be addressed or the entire planet is in peril. But why would the Department of Energy continue its aggressive policies to make more spent nuclear fuel – waste – without having obtained a permanent solution to isolate this waste?

Telling the truth has never been the Department of Energy’s strong suit. But, community leaders who would invite a consent-based “interim” storage site to their community, and the public, must be told the truth about the short-term and long-term risks of extensive radiological contamination posed by this storage and from transportation. They must be told the truth about the difficulties in obtaining a permanent repository. They must be told the truth about enormous financial costs of trying to obtain one or two repositories must be disclosed. And they must be told the truth about the glaring inadequacies of the current radiation protection standards adopted by the DOE and the NRC.

Community leaders must also understand the inadequacies of emergency response and of radiological monitoring when accidents and expected radiological releases occur (from canister breach). They must understand the inadequate compensation for accidents that cause evacuation or damage to property. They must also understand the health harm to radiation workers and their children that will be inevitable for those working around spent fuel canisters even while shielded.

The Department of Energy (along with the U.S. Nuclear Regulatory Commission) appear to accept the approach that they are placing the financial burden and the health risks over millennia on future generations. Placing this burden on future generations and threatening the health of humans and all creatures for millennia is immoral and unacceptable. If the Department of Energy had any inclination to care about humans and all life on this planet, it would not be seeking to maximize the creation of more radioactive waste that it does not know how to isolate over millennia.

DOE'S SPECIFIC QUESTIONS IN ITS REQUEST FOR INFORMATION

The Department of Energy's Request for Information includes questions in three areas, listed below.

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?
2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?
3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?
4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?
5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?
6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?
7. What other issues, including those raised in the *Draft Consent-Based Siting Process* ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?
2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?
3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?
4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?
2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?
3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?
4. What other issues should the Department consider in developing a waste management system?

MY RESPONSE TO DOE'S REQUEST FOR INFORMATION

My responses to the Department of Energy's Request for Information are provided below.

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process? The Department of Energy should not seek out those communities easiest to bribe. The DOE should not look upon less densely populated regions as regions that they can radioactively contaminate. My grandparents were part of the "low population zone" that the DOE and NRC systematically don't worry about. The entire attitude that radiation doses to less- densely populated areas don't really matter - is an injustice to people living in farming and ranching areas and other less populated areas.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility? I have seen the DOE seduce and misinform State and local officials in Idaho. If the promise of jobs and money for the state is not enough, then DOE teaches that anyone not going along with DOE is an uninformed, uneducated troublemaker. I have seen State and local officials in Idaho who have virtually no comprehension of the problems with nuclear energy and radioactive waste be easily swayed by the DOE and people in the nuclear industry. The ease with which the DOE misinforms these officials is frightening and I have witnessed it. The officials rarely question what DOE says, and when they do ask a question, they usually accept the insufficient explanations that are offered. All too often, State and local officials (like the Mayor of Idaho Falls) place their trust in "officialdom" and do not question the incorrect and incomplete information they are carefully spoon fed by the Department of Energy. Then there are bribes to these officials from people hoping to profit from nuclear facilities. An informed public is vital to survival of the human species, as it is all too easy to bribe government officials at every level.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites? Here

DOE is asking how to bribe and get the most for their buck. It is immoral largely because “interim” storage is likely to cause serious contamination as the facilities fall into ruin over time.

4. *What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?* Successful siting of federal interim storage facilities would not be needed if disposal facilities (one and actually two repositories the size of the proposed Yucca Mountain repository). Successful siting of an interim storage facility requires timely obtaining a permanent repository and being able to ship the waste from the interim storage site to the permanent repository. The spent fuel canisters at an interim storage facility may not be in the condition to allow the canisters to be safely transported. And the interim storage facilities, all of them that are currently planned, do not have the capability of repackaging the canisters, if needed due to damage, due to transportation requirements or due to disposal repository requirements.

5. *How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?* The Department of Energy must be truthful about the many technical problems that were experienced in trying to obtain the Yucca Mountain repository. See my complete comment on this topic below in the section titled “Additional Detail.” Because there will be no disposal facility to send the spent fuel to, the design life of the interim storage facility is very likely to be significantly exceeded. Even before the design life of the interim storage facility is exceeded, spent fuel canisters can be expected to develop through-wall cracking. The through-wall cracking consequences are sure to release radioactive gases and perhaps also result in hydrogen explosions or criticalities. There is no existing capability to isolate a canister, repair a canister, or repack the fuel into another canister. Even if “interim” storage is not “forever,” it is very likely to be beyond the time that the spent fuel can be stored safely. The radiological releases may require evacuation of homes and property, perhaps permanently. This is part of the reason some spent fuel storage locations near the reactor power plants that used the fuel want this fuel out of their community. There are also terrorism threats. Some locations where the spent nuclear fuel is stored, such as on the Pacific coastline, are extremely unsafe. Why did the U.S. Nuclear Regulatory Commission approve such unsafe locations for spent fuel storage? Makes you wonder about the licensing approval effectiveness of the NRC, which is likely to easily grant a license for interim storage of spent fuel no matter how unsafe over the time that spent fuel will be stuck there.

The longevity of the radioactive waste is hard to fathom, and even nuclear professionals often do not realize how long the radioactive waste in spent nuclear fuel (and high-level waste) remain radioactive. While certain fission products like cesium-137 and strontium-90 each have a roughly 30 year radioactive half-life, and their presence is greatly diminished in 500 years, other radionuclides in spent nuclear fuel remain radioactive for thousands and over hundreds of thousands of years. The radioactive decay of some decay series actually make the waste more radioactive over time. The waste is still highly radiotoxic for a million years even though the decay heat generated at that time is far less than when the fuel was removed from a nuclear reactor.

The Department of Energy's Performance Assessment for disposal of radioactive waste not being exhumed from the Idaho National Laboratory's Radioactive Waste Complex after the CERCLA so-called "cleanup" has been conducted focused on the first 1000 years and didn't concern itself at all with performance after 10,000 years despite the peak radioactivity occurring after 10,000 years.

Downgradient of INL, the migrating buried waste will reach 100 mrem/yr unless the soil cap performance is perfect for millennia. But that is based on contrived modeling of soil "sorbing" factors that slow the migration of the waste into the aquifer and contrived mixing that maximizes dilution.³ The DOE's report summarizing the "forever contamination" at RWMC was never disclosed to the public prior to EDI's freedom of information act request.⁴ The figure below, from the DOE's report showing the rising radiation doses largely from migration of

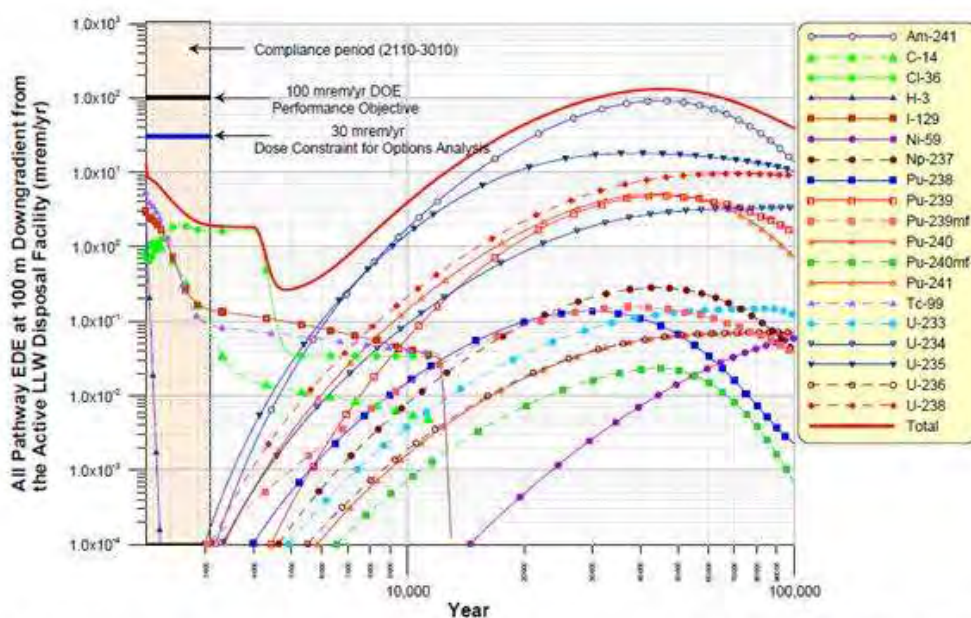


Figure 4-2. All-pathways effective dose equivalent 100 m downgradient from the Radioactive Waste Management Complex boundary from year 2110 to year 100,000 with cover infiltration rate equal to 1 cm/year.

³ See that the publicly available administrative record for RWMC cleanup does not contain the assessment of radionuclide migration and radioactive doses after 10,000 years. The pre-10,000-year contaminant migration is artificially suppressed for the first 10,000 years and then rapidly escalates and stays elevated for hundreds of thousands of years. See the Administrative Record at Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) documents for documents associated with this cleanup action, including "Record of Decision" documents and EPA mandated Five-year Reviews at <http://ar.inel.gov> or <http://ar.icp.doe.gov>

⁴ U.S. Department of Energy, 2008. Composite Analysis for the RWMC Active Low-Level Waste Disposal Facility at the Idaho National Laboratory Site. DOE/NE-ID-11244. Idaho National Laboratory, Idaho Falls, ID and U.S. Department of Energy, 2007. Performance Assessment for the RWMC Active Low-Level Waste Disposal Facility at the Idaho National Laboratory Site. DOE/NE-ID-11243. Idaho National Laboratory, Idaho Falls, ID. Available at INL's DOE-ID Public Reading room electronic collection. See <https://www.inl.gov/about-inl/general-information/doe-public-reading-room/>

contaminants to the aquifer is shown in the figure below depicting the 100 mrem/yr case without credit for the soil cap slowing migration of contaminants to the aquifer. The time scale on the figure gives the reader some important perspective on the longevity of radioactive waste that includes plutonium, americium, uranium, technetium-99 and iodine-129.

6. *What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?* Because the Department of Energy has no credibility with anyone who understands the issues, and because even panels that are put together for reviews are stacked with industry promoters whose careers would be ended if they spoke the truth about the nuclear industry. These brain-washed experts promote the nuclear industry no matter the peril to the planet. It is very difficult to suggest who or how to partner with. Even the National Academy of Sciences has often made sure that its panels were overstocked with industry promoters to the degree that their information is biased and inadequate. The recent panel for removing a portion of the Hanford tank waste comes to mind and how ignorant they were of the actual DOE regulations and manuals and how these worked in practice. The recent National Academy of Sciences report,⁵ despite its highly educated membership, incorrectly states that the term “low-activity waste” has been defined by the Department of Energy in the current version of DOE Manual 435.1 when actually there is no definition for low-activity waste. The degree to which DOE’s regulations can be exempted on whim or modified on whim did not appear to be understood by that NAS team or by the U.S. Government Accountability Office (GAO). The GAO has misinformed our Congress about various aspects of the radioactive tank waste at DOE facilities.⁶ Something like a National Academy of Sciences panel is needed but not one whose composition is driven by the nuclear industry. The Blue Ribbon Panel of the past provided a useful compilation of the status of things, but really nothing more than a faith-based belief that a repository would be found and all that was needed was to gently conjure a willing community to host “interim” storage of nuclear waste. The U.S. Environmental Protection Agency has a times been considered more reliable than the Department of Energy; however, the EPA has been infiltrated with the influence of the Department of Energy. This is clear as the EPA has allowed inadequate regulations for disposal of waste when under DOE pressure and when the EPA basically agrees to anything DOE wants during federal so-called “cleanup” projects under CERCLA. Monitoring of waste burial sites for CERCLA at INL has often been inadequate and biased to hide contamination findings by reduced monitoring and reduced reporting. Spotty monitoring of land and the aquifer means “no discernable trend could be found.” The EPA is more of a lap poodle than a watch-dog.

7. *What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?* All communications and enticements must be documented. All meetings must allow for public participation. Stakeholders must be allowed adequate time to point out the Department of

⁵ National Academies of Sciences, Engineering, and Medicine 2020. *Final Review of the Study on Supplemental Treatment Approaches of Low-Activity Waste at the Hanford Nuclear Reservation: Review #4*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25710>. Access to free PDF downloads is available currently.

⁶ Government Accountability Office, Hanford Cleanup – DOE’s Efforts to Close Tank Farms Would Benefit from Clearer Legal Authorities and Communication, GAO-21-73, January 2021 at www.gao.gov (See page 29.)

Energy's lies and omissions to the state and community leaders the DOE is conning. Three minutes of spoken comments or a postage stamp-sized comment paper to place in a box is not an adequate way to combat DOE's massive dis-information to communities.

The DOE has also conducted numerous public comment opportunities, only to refuse to publish those public comments such as the consent-based interim spent nuclear fuel storage meetings conducted a few years ago.^{7 8}

Unlike previous DOE comment opportunities, this DOE public comment opportunity requested the submitter's address and phone number and email all to be made public. The DOE's request for phone numbers and home addresses and their intention to make this information publicly available, online, shows its commitment to seeking to dissuade citizens from commenting. Other agencies collect that information but do not make it publicly available. The DOE's RFI is highly flawed right from the beginning.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed? Meaningful participation requires complete and truthful information about the difficulty and costs associated with obtaining one or two or more permanent repositories. It would require complete and truthful information about the costs. It would require complete and truthful information about the adverse health impacts from radiation in addition to cancer mortality.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process? It would be essential that these communities have access to accurate and unbiased information. I would point out that nearly all universities are seeking funding from the nuclear industry, including the Department of Energy and the Department of Defense and therefore, most universities are not an unbiased resource for information on nuclear issues. To the contrary, anyone not willing to coverup nuclear industry problems is weeded out. I have for years watched the Department of Energy minimize, ignore, lie, and coverup problems all while pretending to provide accurate information. I have also watched the U.S. Geological Survey do the same, in order to coverup Department of Energy contamination. The nuclear industry does not just coverup its fraud, its high accident risk and its high costs, it covers over the actual human health harm from radiation exposure. While increased cancer risks are acknowledged, the full range of adverse impacts are usually not analyzed or disclosed but have been observed including birth defects, infertility, heart disease, and reduced immune system functioning. The nuclear industry systematically refuses to conduct meaningful epidemiology in the U.S. The problem of obtaining truthful information about the nuclear-related issues is

⁷ Before ending the consent-based siting effort, information found about the Department of Energy's consent-based siting at www.energy.gov/consentbasedsiting and its Integrated Waste Management and Consent-based Siting booklet at <http://energy.gov/ne/downloads/integrated-waste-management-and-consent-based-siting-booklet>

⁸ Environmental Defense Institute's comment submittal on the Consent-based Approach for Siting Storage for the nation's Nuclear Waste, July 31, 2016. <http://www.environmental-defense-institute.org/publications/EDIXConsentFinal.pdf>

immense. But a meaningful consent-based process is not possible without truthful and complete information.

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities? In Idaho, the Department of Energy has been spreading propaganda and disinformation at the Idaho National Laboratory, the associated Citizens Advisory Board and the Idaho Leadership in Nuclear Energy Commission. The DOE-funded Idaho National Laboratory hosted propaganda meetings to spread lies about the Chernobyl accident. DOE knows how to conduct propaganda meetings – that is a concern. DOE does not know how to tell the truth about the issues and problems. Not even at a Nuclear Waste Technical Review Board meeting does the DOE tell the truth. There needs to be some accountability for the lies DOE tells, but really, there is not. Until there is some accountability for the continuing lies, there is no reason to expect anything to change.

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities? The Department of Energy knows how to keep State of Idaho officials in line. The Idaho Department of Environmental Quality has become a branch of the Department of Energy. Even when the RCRA permit was violated and four waste drums exploded at the Idaho National Laboratory, the Idaho DEQ refused to bring changes against the unlawful intentional violations. The Department of Energy displays adequate ability in how to groom local officials. It is already effective. It just is not truthful about the costs, accident risks, and risk of permanent harm to the planet.

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

The issue of spent fuel storage and disposal costs. The issues must include, in addition to the history of trying to obtain a repository, including the technical issues and the use of fraud and technically indefensible models, **the issue of cost must be addressed.** While cost may be difficult to pin down, a realistic perspective on the enormous unfunded costs of one or two repositories, the costs of repackaging fuel for disposal, the cost of transportation from reactor sites to interim storage, the costs of transportation (and repackaging) from the interim storage facility to a repository, the costs of transportation infrastructure upgrades, and the cost of a severe accident during storage and during transportation or at the interim storage site need to be presented. The annual costs of continued storage will be paid for by the U.S. tax payer, at Department of Energy sites like the Idaho National Laboratory for DOE research spent nuclear fuel and for commercial nuclear spent fuel as utilities sue the Department of Energy for those costs. And the multi-billion-dollar costs of repackaging the spent nuclear fuel as the containers corrode is not something the U.S. Nuclear Regulatory Commission nor the Department of Energy want citizens to think about. Consent-based siting must present a realistic perspective of the costs beyond the costs of constructing a nuclear power plant and beyond the costs of constructing an interim storage facility.

The issue of uncompensated or inadequately compensated accidents, including transportation accidents. The NRC's unrealistically low-balled transportation accident severity for a transportation accident is inadequate for the varieties of untested casks and the range of

transportation risks, including sabotage. The NRC's assurances of safety during spent fuel storage are also bogus and rely on either evacuation or grossly inadequate radiological monitoring if something goes wrong.

As a country, in the U.S. we have not found the money to keep up with normal and expected repair of our crumbling roads, railways and bridges. Bridge and railway accidents have increased during the last twenty years, as has the severity of fires involved with railway transport of oil.

Yet the nuclear promoters want to greatly increase the transportation of nuclear waste and in larger and heavier containers. The Price Anderson Act does not compensate citizens for radiological releases from transportation accidents that may result in contaminated homes, property, businesses and shortened life spans and disease. The radiological contamination could be severe, despite assertions and active government-sponsored propaganda campaigns to the contrary.

The costs of contaminated land and ruined industries such as farming or potash mining near the consolidated storage facility must be addressed.

The issue of inadequate emergency response. Not only was the emergency response to the Department of Energy WIPP accidents inadequate in 2014, and the Department of Energy plutonium inhalation event at INL in 2011, it was inadequate at the Idaho National Laboratory's Radioactive Waste Management Complex in 2018 when, due to deliberate actions to ignore the known contents of waste drums, four waste drums forcefully expelled their powdery contents within a fabric enclosure. At this Department of Energy laboratory, the fire department responded to the event due to activation of a fire alarm and the fire department had no idea a radiological event had occurred. The radiation constant air monitors did not alarm and the facility had no available radiological support with knowledge of what might have happened in the facility and had no radiological support staff with self-contained breathing apparatus training – because it was assumed that no matter the unreasonable risks they were taking, there would not be an event.

The stakeholders need to understand how the lack of proper decontamination facilities means that an injured worker is going to radiologically contaminate medical facilities in their community.

The issue of inadequate routine or accident radiological monitoring. The history of unreliable and inadequate radiological monitoring programs having anything to do with the NRC or the Department of Energy should also be discussed. In the few locations with U.S. Environmental Protection Agency radiological monitoring, they rely on DOE's contractors to provide sample data and data blackouts are common when radiological emissions are elevated.

The Department of Energy's environmental monitoring programs are often wrong about the source of contamination as in southeast Idaho they attribute elevated levels of airborne americium-241 to past nuclear weapons testing when in fact it is due to ongoing INL radiological

emissions. There is no independent oversight and no error reporting or review of the DOE's highly biased and inadequate environmental monitoring program, see idahoeser.com.

The DOE's environmental monitoring contractor routinely does not provide quarterly monitoring reports, incorrectly attributes INL radiological releases to historical weapons testing, fails to provide trending information, and fails to explain the large gaps in data availability. There is no independent or honest assessment and oversight of the lapses common to the DOE's environmental monitoring program.

The issue of worker and public radiation exposures. The costs to families from acute and chronic radiation exposures should be discussed. The costs of the DOE's billions of dollars for Energy Worker Illness Compensation must also be discussed. And the fact that illness claims are not just from the era when higher annual doses were allowed needs to be understood. Illness claims continued to be submitted from relatively recent exposure while working at DOE facilities in the late 1990s and later. This is likely due to inadequate attention to elevated airborne radioactivity at the INL and continued inadequate attention to alpha emitters.

Communities and citizens who care about their health, the health of their children and spouses, the health of future generations, need complete and accurate information about the costs, accidents risks, and adverse health effects of radiation exposure. Chronic radiation exposure in southeast Idaho from continuing radiological airborne releases have caused every county surrounding the INL to have roughly double the incidence of thyroid cancer compared to the rest of the state and the country. This has been the case for many years. The stated estimated annual doses from airborne releases are said to be a fraction of a millirem, effective whole body and are said to be less than background radiation levels. Despite what the DOE says, the thyroid dose from the airborne emissions is above natural background. And the DOE and the State of Idaho have ignored the increased thyroid cancer incidence. This is just one example of DOE lying to the public about the human health risk. The DOE has lied to its radiation workers for decades and continues to lie to them about their radiation exposures and the health risks. Most people do not understand how similar the DOE's accepted radiation protection policies are based on "tobacco science." The radiation health standards which are based on the one-time exposure of the World War II atomic bombings of Japan really do not reflect the full reality of living with chronic radiation exposure from contaminated air, soil, water and food. Even the Secretary of the International Commission on Radiological Protection admitted, before resigning, that the modeling of internal dose underestimated the harm at least 100-fold.

The spent nuclear fuel from operating the nuclear power plants around the U.S. has no place to go. The Department of Energy is responsible for taking ownership of the radioactive spent nuclear fuel that remains hazardous and a risk to the environment for millennia. But the Department of Energy has no disposal facility and has no program for a disposal facility. The DOE cannot even collect fees for paying for a fraction of the cost of disposing of spent nuclear fuel, because a court found that DOE had no spent fuel disposal program.

The DOE would like to give the impression that parking lot dumps, like the spent fuel storage facilities proposed for New Mexico and Andrews, Texas are a solution. But those facilities are not designed for the long-term. And when their U.S. Nuclear Regulatory

Commission license expires and there is still no disposal facility, these states will be stuck with radioactive waste that cannot be repackaged and has no place to go.

The thin-walled metal canisters that the spent nuclear fuel is being stored in are stainless steel and are known to be susceptible to chloride-induced stress corrosion cracking within a couple decades. There is no way to repair a cracked canister and no way to repackage the fuel into a new canister. The U.S. NRC allowed unsafe canisters to be used for packaging spent nuclear fuel. Only now is the NRC beginning to admit that although the capability of repackaging the spent nuclear fuel was a requirement, that they actually don't have a way to repackage the fuel if defects in the canister are found or if fuel loading errors were made. **Leave the problems to future generations — that is the U.S. Nuclear Regulatory Commission's and the Department of Energy's approach.**

The Department of Energy has continued to characterize the nation's spent nuclear fuel inventory as able to fit on a single football field. Yet, whether characterized as 15 ft deep for 69,000 metric tons or 30 ft for 83,000 metric tons, the characterization is very misleading.

Although the proposed Yucca Mountain repository license submittal was for 70,000 metric tons of storage, as limited by the Nuclear Waste Policy Act, it has been projected that for past and expected nuclear reactor operation in the U.S., by 2055 there will be roughly 10,000 canisters (or 140,000 metric tons heavy metal) of spent nuclear fuel needing disposal, and a significant portion of them would be capable of going critical if water ingress occurs.⁹

The fact is that the Department of Energy was needing 41 miles of waste emplacement tunnels (or drifts) at the proposed Yucca Mountain repository as limited by law to 70,000 metric tons of spent nuclear fuel. And this assumed repackaging and positioning the waste to limit the thermal heat load.¹⁰ Even so, the repository could heat up and invalidate the geological stability of the repository.

The space needed for a repository is also affected by the need to limit the potential for multiple criticalities, should one package go critical. The DOE has found that criticalities are to be expected. The ability of the spent fuel to go critical depends on the enrichment in fissile material, the buildup of fissile material during reactor operation, the presence of fission products (reduces the ability to go critical but changes over time), and whether the neutron absorbers in the container remain intact. Some of the higher enriched fuel now used by the commercial nuclear industry, even with neutron absorbers intact, will go critical if the canister is partially or fully flooded with unborated water.

The Department of Energy, without actually credible analysis, used to argue that the probability of criticality occurring in a repository was low. But that is no longer true because the

⁹ Alsaed Abdelhalim, Enviro Nuclear Services, LLC, Spent Fuel and Waste Disposition, *Review of Criticality Evaluations for Direct Disposal of DPCs and Recommendations*, SFWD-SFWST-2018-000***, SAND2018-4415R, April 20, 2018. <https://prod-ng.sandia.gov/techlib-noauth/access-control.cgi/2018/184415r.pdf>

¹⁰ U.S. Department of Energy, *Draft Supplemental Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada*, DOE/EIS-0250F-S1D, October 2007. https://www.energy.gov/sites/prod/files/EIS-0250-S1-DEIS-Summary-2007_0.pdf

commercial utilities began using higher enrichments in the fuel for their nuclear plant. This fuel is often referred to as “high burn-up fuel” because the fuel can be operated longer in a nuclear reactor.

The Department of Energy has had to admit that criticality could occur after containers corroded and there was no assurance that neutron absorbers would be intact or that geometries separating fissile material would be maintained.

The Department of Energy’s originally envisioned inventory for Yucca Mountain had included 2 percent enriched commercial spent nuclear fuel and the residual vitrified high-level waste from reprocessing at West Valley.¹¹ It was expanded substantially when the Navy ceased reprocessing the high enriched naval and DOE research fuels by 1992 and it meant that now these fuels would require disposal. And it was another substantial change when the DOE identified the surplus weapons plutonium, potentially for disposal at Yucca Mountain.

The disposal of surplus plutonium from weapons production included for disposal at the proposed Yucca Mountain Repository created additional criticality concerns.

Two scientists from Los Alamos National Laboratory would explain how the plutonium-239 posed a particularly high criticality risk at Yucca Mountain.^{12 13} The Department of Energy has continued to argue that while criticality is possible at Yucca Mountain, it is sufficiently unlikely and of unimportant consequence if it does occur.¹⁴ But the risk of criticality posed by the disposal of surplus weapons plutonium (and spent nuclear fuel) at Yucca Mountain is substantial and not to be casually dismissed, no matter how emphatically the DOE tries to arm-wave the risk away. **And in addition, the criticality risks remain after 10,000 years, yet there is no regulatory requirement to assess or limit the criticality risk after 10,000 years, either at Yucca Mountain or WIPP.**

The regulations for the proposed Yucca Mountain repository provide some inappropriate leeway regarding criticality and groundwater protection after 10,000 years giving the Department of Energy room to wiggle regarding criticalities (and their fallout) that occur after 10,000 years even though the criticality risks don’t peak until after 25,000 years. Groundwater protection after 10,000 years is limited to only those events deemed more likely than an annual probability of 1.0E-4/yr. But there are thousands of years to be exposed to a potential criticality event.

Over time, the criticality risk doesn’t go away. For pressurized water reactor (PWR) fuel arranged as it would be in a canister known as a 32-PWR, having initial 4 percent enrichment (and operated in a reactor to 40 GW-d/MT burnup), k-effective versus time was determined. The

¹¹ Spent nuclear fuel and high-level waste (HLW) resulting from spent nuclear fuel reprocessing are specific types of radioactive waste; however, some documents use the term **high-level waste** to mean both the spent nuclear fuel and the waste from spent nuclear fuel reprocessing.

¹² C. D. Bowman and F. Venneri, Los Alamos National Laboratory, *Underground Autocatalytic Criticality from Plutonium and Other Fissile Material*, LA-UR 94-4022, 1994.

¹³ C. D. Bowman, Los Alamos National Laboratory, *Underground Supercriticality from Plutonium and Other Fissile Material*, LA-UR-94-4022A, 1994.

¹⁴ Rob P. Rechard et al., Sandia National Laboratory, *Consideration of Criticality when Directly Disposing Highly Enriched Spent Nuclear Fuel in Unsaturated Tuff: Bounding Estimates*, May 1996.

higher the k-effective value, the higher the reactivity. A k-effective value at or above 1.0 (or above about 0.98 for margin) when flooded with water can go critical.

While the criticality risk of the fuel is high in the first 100 hours after shutdown and remains at its highest during the first year, the reactivity, or k-effective, declines during the first 100 years. **However, after about 100 years, the k-effective climbs steadily (and the criticality risk), peaking at about 25,000 years after its use in a reactor before starting to decline again.**¹⁵

The heat load of the spent nuclear fuel placed in the repository poses a risk to the structure of the repository and the DOE never actually decided whether to use a “hot” repository or a “cool” repository design. The amount of waste and how it is spaced in the repository obviously affect the ability to cool thermally hot spent nuclear fuel.

In reality, which is not where DOE spin-doctors live, there needs to be space to allow thermal heat removal to limit the heat buildup and limit the temperatures in the repository. Next, there is the need to design a container to keep a single container from going critical and this can limit the fuel assemblies that can go in a container. Then the fuel must be spaced to prevent multiple containers from going critical if one goes critical, which is not a remote possibility. And finally, there is the requirement to limit the trickle-out to groundwater. This involved spreading out the spent nuclear fuel so that the trickle-out of radionuclides would be diluted as water infiltrates the repository and radionuclides leach out from corroded containers so that the contamination from the repository remains below the drinking water standards imposed on the repository.

As you can see, imagining the volume of spent nuclear fuel clustered together, stacked in a football field, is nothing like the reality of the difficulty actually faced in hoping to contain the leach out of radionuclides over time as containers corrode and water infiltrates the waste.

The Department of Energy, makes another misleading statement, that spent fuel is a solid.¹⁶ Keep it dry and in an inert gas rather than expose it to air, and usually the spent fuel is a solid. Still, radioactive gases that have built up in the fuel are gases and heat up the fuel, those gases can be released. Depending on the condition of the cladding, hydrides that have built up when the fuel was stored in water, the uranium or zirconium hydrides can offgas hydrogen if the fuel is exposed to air. Hydrogen offgassing can make cutting into spent nuclear fuel canisters a tricky business — which no one has tackled yet.

¹⁵ Energy Workshops, *2018 SFWST Annual Working Group Meeting, Las Vegas, Nevada May 22 to May 24, 2018*. <https://energyworkshops.sandia.gov/nuclear/2018-sfwst-rd-team-meeting/> See presentation #05 on direct disposal of spent nuclear fuel, page 4 the figure of K-effective versus time, and see page 10 for regulations that dismiss fallout effects on groundwater for criticality events after 10,000 years if less than 1.0E-4 annual probability at <https://energyworkshops.sandia.gov/wp-content/uploads/2018/05/05-Direct-Disposal-of-Spent-Nuclear-Fuel-in-Dual-Purpose-Canisters-RD-Path-Forward-SAND2018-5437-PE.pdf>

¹⁶ Department of Energy, Office of Nuclear Energy, *5 Fast Facts about Spent Nuclear Fuel*, March 30, 2020. <https://www.energy.gov/ne/articles/5-fast-facts-about-spent-nuclear-fuel> “In fact, the U.S. has produced roughly 83,000 metric tons of used fuel since the 1950s—and all of it could fit on a single football field at a depth of less than 10 yards.”

Oxidation can occur if the spent nuclear fuel is exposed to air. Normally, spent nuclear fuel canisters are sealed after put helium, an inert gas, into the canister. Much about spent fuel degradation with exposure to oxygen and the pyrophoric behavior of uranium and zirconium has been learned by the Department of Energy, the hard way.^{17 18}

For some idea of how uranium behaves, consider that uranium in a 30-gallon inner drum inside a barrel, disposed of at the Idaho National Laboratory from the Rocky Flats weapons plant, upon excavation, ignited and material was forceable expelled, hitting the cab of the excavator. Oxygen introduced to the inner drum caused **rapid oxidation that released hydrogen from uranium hydride** and resulted in a fire and some self-propelled movement of material.¹⁹

We haven't really touched on the state of affairs with regard to proving that a repository can actually safely contain the waste over millennia. The Department of Energy sees that problem as simply one of "public perception."

The Department of Energy needs two spent nuclear fuel repositories and doesn't even have one. Although the proposed Yucca Mountain repository license submittal was for 70,000 metric tons of storage, as limited by the Nuclear Waste Policy Act, it has been projected that for past and expected nuclear reactor operation in the U.S., by 2055 there will be roughly 10,000 canisters (or 140,000 metric tons heavy metal) of spent nuclear fuel needing disposal, and a significant portion of them would be capable of going critical if water ingress occurs.²⁰

The Nuclear Waste Policy Act remains the law; it limits the quantity of spent nuclear fuel from commercial nuclear power plants to 63,000 metric tons heavy metal (MTHM), 2,333 MTHM for DOE SNF and 4,667 MTHM for HLW. The quantity of commercial SNF, DOE SNF, and DOE-managed HWL are each greater than DOE's allotment for the first repository.²¹ But DOE hasn't obtained its first repository, which by law, would be at Yucca Mountain.

The Department of Energy promised to begin disposal of spent nuclear fuel by 1998. Then came other promised dates that have come and gone. The U.S. Nuclear Regulatory Commission

¹⁷ Primer on Spontaneous Heating and Pyrophoricity, DOE-HDBK-1081-2014, 2014

<https://www.standards.doe.gov/standards-documents/1000/1081-BHdbk-2014/@images/file>

¹⁸ Brett Carlsen et al., *Damaged Spent Nuclear Fuel at U.S. DOE Facilities, Experience and Lessons Learned*, INL/EXT-05-00760, November 2005. At <https://inldigitallibrary.inl.gov/sites/sti/sti/3396549.pdf> See Appendix A for an experience in 1980 when transporting spent fuel. A previously unknown phenomena occurred which was oxygen scavenging from the air by exposure of fuel at the points of cladding failure, which enlarged the existing cladding breaks. From this experience, it was learned that the transported fuel required use of an inert gas such as helium in spent fuel shipments. Further experience is described when the high temperature fuel was submerged back into the pool, resulting in overpressure, in steam and spalling of fuel material from the fuel rods, fuel debris and contamination of the pool.

¹⁹ Kevin Daniels et al., Idaho Cleanup Project, CH2M-WG Idaho, LLC, "Independent Investigation Report of the November 2005 Drum Fire at the Idaho National Laboratory Site," RPT-190, March 2006. <https://ar.icp.doe.gov/images/pdf/200605/2006051600209TUA.pdf>

²⁰ Alsaed Abdelhalim, Enviro Nuclear Services, LLC, Spent Fuel and Waste Disposition, *Review of Criticality Evaluations for Direct Disposal of DPCs and Recommendations*, SFWD-SFWST-2018-000***, SAND2018-4415R, April 20, 2018. <https://prod-ng.sandia.gov/techlib-noauth/access-control.cgi/2018/184415r.pdf>

²¹ U.S. Nuclear Waste Technical Review Board (NWTRB), Management and Disposal of U.S. Department of Energy Spent Nuclear Fuel. Arlington, December 2017. See p. 15.

believed those empty promises from the Department of Energy, expecting to disposal by 1998, then 2008, and then by the first quarter of this century.²² The Department of Energy's rapidly evolving waste emplacement concepts continued to evolve as every assumption about how the repository would contain the waste didn't hold up. No utility has packaged its spent nuclear fuel into DOE's recommended "transport, aging and disposal" TAD canister. The Yucca Mountain repository concept also relies on never designed titanium drip shields that no one honestly believes are feasible to install decades after the waste is emplaced.

Department of Energy has no spent nuclear fuel repository program and hasn't since 2010. The Department of Energy **has no credible cost estimate for the costs of disposal of now-existing spent nuclear fuel** plus the fuel from already operating reactors. Few people know that there is already more than double the amount of spent nuclear fuel (and high-level waste) than Yucca Mountain was set to legally hold. And few people know that if nuclear energy were to make a dent in climate, we would need a new Yucca Mountain every year.

The Department of Energy was struggling for years to keep the radionuclide trickle-out doses below EPA standards. But something would happen to drastically lower the Department of Energy's trickle out problem and radiation doses between 2007 and 2008 when the DOE submitted its license application for Yucca Mountain to the NRC. I had trouble understanding how the predicted doses dropped from a couple hundred millirem to less than 1 mrem/year for post-10,000-year time frame. Both the earlier and later submittals had assumed perfect titanium drip shield performance, despite the implausibility of ever installing them in the repository.

The problem of the estimated high radionuclide trickle-out from Yucca Mountain ended when Sandia took over the modeling of radionuclide trickle out and elected to squash the assumed water infiltration rates through the proposed Yucca Mountain repository. **A review of Sandia's modeling for Yucca Mountain that yielded estimates of low radiation doses from water contamination from the trickle out of radionuclides found that the Sandia models were technically indefensible.**²³

That independent review of DOE's calculations had been contracted by the DOE but withheld from the State of Nevada. The review's conclusion was that the Department of Energy's modeling, by Sandia, of water infiltration to the disposed of waste **did not provide a credible representation of water infiltration at Yucca Mountain.**

In other words, because the periodic spikes in water infiltration had raised the estimated radiation dose, the water infiltration spikes were simply removed from the modeling in order to drive the estimated radiation exposures down. The contamination trickle-out problem that had previously estimated 95th percentile radiation doses above 1000 mrem/yr (yes, one thousand mrem/yr) and would struggle to meet the 100 mrem/yr median requirement by EPA regulations

²² Nuclear Regulatory Commission, 10 CFR 51, Waste Confidence-Continued Storage of Spent Nuclear Fuel, Federal Register, Vol. 78, No. 178, September 13, 2013.

²³ Senate Hearing 109-523, Yucca Mountain Repository Project, May 16, 2006.
<https://www.govinfo.gov/content/pkg/CHRG-109shrg29473/html/CHRG-109shrg29473.htm>

now had contrived the modeling to slash the estimated radiation dose to a person living 15 km (or 11 miles) downgradient to less than 1 mrem/yr.²⁴

The Department of Energy is also focusing on trying to say that multiple criticalities in a waste repository won't add that much harm to a disposal repository's already estimated harm.

The Department of Energy stated it had collected \$28.2 billion from commercial nuclear utilities for the "Nuclear Waste Fund." The U.S. Court of Appeals agreed to end DOE's collection of fees because DOE did not have waste disposal program for spent nuclear fuel and also because the DOE's latest fee assessment covered an enormous range of possible costs, from somewhere between \$25 billion and \$2 trillion dollars, so there was no way to determine the adequacy of the fees paid.²⁵

The court found that the DOE's 2011 plan to somehow find a spent nuclear fuel disposal facility by 2048 was "pie in the sky."²⁶

Under the 1982 Nuclear Waste Policy Act, DOE was to have a disposal facility by 1998. And nuclear utility customers would pay one-tenth of a cent for every kilowatt hour of nuclear-generated electricity in to the Nuclear Waste Fund. The collection of the fee ended on what is being called "zero day," May 16, 2014.²⁷

In FY-2020, various funding appropriations for interim storage of spent nuclear fuel have been put forth. Two consolidated interim storage sites, one New Mexico and near it in southwest Texas, are pursuing licenses from the Nuclear Regulatory Commission.^{28 29 30} Because current regulations limit the Department of Energy's role involving interim storage when no license for a disposal facility has been obtained, some of the bills put forth in Congress are trying to change that.

²⁴ Letter from Council for the State of Nevada to Secretary of the U.S. Nuclear Regulatory Commission, State of Nevada's Supplement to its June 4, 2008 Petition Asking the NRC to Reject DOE's Yucca Mountain License Application as Unauthorized and Substantially Incomplete, July 21, 2008. The letter cites the review of DOE's infiltration model performed at DOE's request by ORISE (Oak Ridge Institute for Science and Education). ORISE provided the results of this independent review to DOE on April 30, 2008. <http://www.state.nv.us/nucwaste/news2008/pdf/nv080721nrc.pdf>

²⁵ Steven Dolley, Elaine Hiruo, and Annie Siebert, *S&P Global Platts*, "Federal court orders suspension of US DOE nuclear waste fund fee," November 19, 2013. <https://www.spglobal.com/platts/en/market-insights/latest-news/electric-power/111913-federal-court-orders-suspension-of-us-doe-nuclear-waste-fund-fee>

²⁶ Ibid.

²⁷ World Nuclear News, Zero day for US nuclear waste fee, May 16, 2014. <https://www.world-nuclear-news.org/Articles/Zero-day-for-US-nuclear-waste-fee>

²⁸ Tami Thatcher comment submittal for Environmental Defense Institute for the NRC's draft Environmental Impact Statement for the Holtec Consolidated Interim Storage Facility Project, Docket NRC-2018-0052, September 2020 at <http://www.environmental-defense-institute.org/publications/CommentNRCdEISHoltecT.pdf>

²⁹ David B. McCoy, Citizen Action New Mexico, comment submittal for the NRC's draft Environmental Impact Statement for the Holtec Consolidated Interim Storage Facility Project, Docket NRC-2018-0052, September 2020 at <http://www.environmental-defense-institute.org/publications/CommentNRCdEISHoltecM.pdf>

³⁰ Environmental Defense Institute comments by Tami Thatcher on the Interim Storage Partners proposed Consolidated Interim Storage at the Waste Control Specialists site in Andrews County, Texas at <http://environmental-defense-institute.org/publications/CommentNRC2018Texas.pdf>

In the last decade, there's been a lot of focus in the Department of Energy's spent fuel disposal research on disposal in a salt medium. ^{31 32} And the proposed placement of two consolidated interim storage facilities is located within 30 miles of the salt mine disposal at the Waste Isolation Pilot Plant (WIPP) in New Mexico.

The U.S. has decided by the 1970s that it needed a deep geologic repository in order to contain the radionuclides in spent fuel and high-level waste over the thousands of years, actually over a million years, that the radionuclides remain radiotoxic. After 50 years of trying, the Department of Energy is no closer to obtaining a solution for safely containing the nation's spent nuclear fuel and high-level waste.

The Department of Energy wants people to think that "interim" or actually "indefinite" storage of spent nuclear fuel is satisfactory. The Department of Energy wants to ramp up and make more spent nuclear fuel so DOE doesn't want people to understand the truth of what burden, in terms of cost and in terms of the release of radionuclides to the environment, what devastation to humanity and all life, that this involves.

In addition to the unsolved technical difficulties and the cost of disposing of the spent fuel and high-level waste are the issues of cost and risk for "continuing storage" of spent nuclear fuel, above ground, are something the Department of Energy is also not being truthful about.

The failure of the Department of Energy to secure a solution for the disposal of spent nuclear fuel has resulted in some commercial nuclear utilities having to result to rather torturous litigation in order to get the DOE to pay some of the utilities' expenses for continued storage of the spent nuclear fuel. The 1982 Nuclear Waste Policy Act allowed the Department of Energy to enter into contracts with commercial nuclear utilities, with the Department of Energy promising to take ownership of the spent nuclear fuel.

In 2014, it was estimated by contractors for the Department of Energy that by 2035, half of the commercial spent fuel inventory in the US would be stored in approximately 5,000 dual-purpose-canisters. And if no nuclear power reactors were built, but existing reactors continued to run as projected, the spent nuclear fuel inventory was projected to be approximately 139,000 metric tons heavy metal (MTHM) by 2055, or 10,000 canisters in 2055. ³³

But as the utilities sought to be paid for continuing costs of caring for spent nuclear fuel after the 1998 date the DOE was to have a repository for the spent fuel, many would have to fight in court. The Department of Energy fought strenuously to avoid compensating the utilities, saying

³¹ Henrik Lijenholt et al., Spent Fuel and Waste Science and Technology, *Summary of Investigations on Technical Feasibility of Direct Disposal of Dual Purpose Canisters*, SFWD-SFWST-2017-000045, September 2017. <https://info.ornl.gov/sites/publications/Files/Pub102524.pdf>

³² Energy Workshops, *2018 SFWST Annual Working Group Meeting, Las Vegas, Nevada May 22 to May 24, 2018*. <https://energyworkshops.sandia.gov/nuclear/2018-sfwst-rd-team-meeting/> See presentation number 68 and others.

³³ E. Hardin et al., Spent Fuel and Waste Disposition, Prepared for U.S. Department of Energy, Office of Used Nuclear Fuel Disposition, *Investigations of Dual-Purpose Canister Direct Disposal Feasibility (FY14)*, FCRD-UFD-2014-000069 Rev. 1, October 2014. <https://www.energy.gov/sites/prod/files/2014/10/f19/7FCRDUF2014000069R1%20DPC%20DirectDispFeasibility.pdf>

that the problem was “due to an unavoidable delay.” Years of litigation ultimately found that the Department of Energy did need to pay for some of the costs of continuing spent fuel storage and settlements with utilities.³⁴ But the settlements for partial breach of contract only cover the time up to the date of the court filing. So additional settlements must continue to be requested as time moves on but the spent fuel doesn’t.

Commercial power utilities with stranded fuel, that shutdown their nuclear reactors, also wanted to shut down the spent fuel pools. Other utilities simply ran out of space in their spent fuel pools. The only answer was to put the spent fuel into dry storage casks or canisters.

There are various dry storage systems licensed by the U.S. Nuclear Regulatory Commission. And most of the fuel is in thin-walled stainless steel canisters rather than bolted-lid containers. For many of the canisters, thin means so thin-walled that the Department of Energy is loath to mention just how thin: about 0.5 to 0.5625 inches of wall-thickness of the canister containing about 10 metric tons of spent nuclear fuel.³⁵

The dry storage systems used by the utilities were never designed for disposal of the spent nuclear fuel at Yucca Mountain or any other disposal facility. Some of the containers can’t be transported,³⁶ but those that can, are referred to a dual-storage-canisters, meaning they can be stored in place and also transported.

Various presentations and reports for the Department of Energy display a disclaimer stating “This is a technical presentation that does not take into account the contractual limitations under the Standard Contract. Under the provisions of the Standard Contract, DOE does not consider spent fuel in canisters to be an acceptable waste form, absent a mutually agreed to contract modification.”³⁷

³⁴ EveryCRSReport.com, Contract Liability Arising from the Nuclear Waste Policy Act (NWP) of 1982, R40996, February 1, 2012. <https://www.everycrsreport.com/reports/R40996.html>

³⁵ E. Hardin et al., Fuel Cycle Research and Development, Prepared for U.S. Department of Energy Used Fuel Disposition Campaign, *Assumptions for Evaluating Feasibility of Direct Geologic Disposal of Existing Dual-Purpose Canisters*, FCRD-UFD-2012-000352, Rev. 1, November 2013. (SAND2013-9780P), <https://www.osti.gov/servlets/purl/1673713> See Appendix A.

³⁶ E. Hardin et al., Fuel Cycle Research and Development, Prepared for U.S. Department of Energy Used Fuel Disposition Campaign, *Assumptions for Evaluating Feasibility of Direct Geologic Disposal of Existing Dual-Purpose Canisters*, FCRD-UFD-2012-000352, Rev. 1, November 2013. (SAND2013-9780P), <https://www.osti.gov/servlets/purl/1673713> p. 24: Storage-only canister systems include the MSB (24-PWR, Energy Solutions) and the NUHOMS-24PS, -24PH, -24PHB< -24PHBL, -52B and -07P (Transnuclear). These canisters currently exist at the Idaho National Laboratory, and at the Calvert Cliffs, Surry, Oconee, Arkansas Nuclear One, Palisades, Davis-Besse, Point Beach, Susquehanna, and H.B. Robinson nuclear power plants. These are sealed canisters, not to be confused with non-canistered cask systems (storage-only or storage-transportation) which have bolted closures.

³⁷ E.L. Hardin and D.J. Clayton, Sandia National Laboratories, R.L. Howard, J.M Scaglione, E. Pierce and K. Banerjee, Oak Ridge National Laboratory, M.D. Voegelé, Complex Systems Group, LLC, H.R. Greenberg, J. Wen and T.A. Buscheck, Lawrence Livermore National Laboratory, J.T. Carter and T. Severynse, Savannah River National Laboratory, W. M. Nutt, Argonne National Laboratory, Prepared for: U.S. Department of Energy, Office of Used Nuclear Fuel Disposition, *Preliminary Report on Dual-Purpose Canister Disposal Alternatives (FY13)*, FCRD-UFD-2013-000171, Revision 1, December 2013. <https://www.energy.gov/sites/prod/files/2013/12/f5/PrelimRptDPCDisposalAlternativesR1.pdf>

According to a decommissioning document submitted to the NRC regarding one utility's canistered spent fuel, "the government's [DOE's] stated positions with respect to such acceptance [of spent fuel in canisters], including assertions in legal proceedings, have been inconsistent." And as recently as 2008, the Department of Energy continued to give empty promises to the U.S. nuclear power electrical generating utilities of promised dates for opening Yucca Mountain by 2020.³⁸

In 2009, the Department of Energy Secretary Steven Chu stated that Yucca Mountain was no longer an option.³⁹ In 2010, President Obama created the Blue-Ribbon Commission on America's Nuclear Future and the commission issued its report in 2012.⁴⁰ The BRC's strategy included "**prompt efforts** to develop one or more geologic disposal facilities" and "**prompt efforts** to develop one or more consolidated interim storage facilities."⁴¹

Originally the Department of Energy had envisioned and had partially designed a "transport, aging, and disposal" container called the "TAD." It was to be highly corrosion resistant. The license application by the DOE for Yucca Mountain assumes that spent nuclear fuel is placed into TADs and that the TADs don't corrode for 10,000 years. (Other containers, like the multi-purpose canister, were assumed for Department of Energy high-level waste and spent fuel.) Inside Yucca Mountain, the commercial spent fuel was to be protected by the TAD, the neutron absorber in the TAD, additional metal waste package coverings, and the titanium drip shield protects the container of spent nuclear fuel. And in all this fanciful imagining, the likelihood of criticality is deemed to be "low."⁴² And the trickle out of radionuclides from the dissolving containers and the fuel they hold is deemed to be so slow that water downgradient from the Yucca Mountain disposal site doesn't cause more than a 1 mrem/yr radiation dose.

Just a few problems with unloading the welded, thin-walled canisters and putting that spent nuclear fuel in a TAD. First of all, no design for a TAD was ever completed or licensed. Second of all, despite NRC regulations requiring the canisters they licensed to allow the spent fuel to be retrievable, it isn't.

The NRC licensed the dry storage canisters in use at many commercial nuclear power plants in the U.S. The NRC codified the requirement in its regulations, including 10 CFR 72.122(1), which states

³⁸ Dominion Energy Kewaunne, Inc., Kewaunee Power Station Post-Shutdown Decommissioning Activities Report, February 26, 2013. <https://www.nrc.gov/docs/ML1306/ML13063A248.pdf>

³⁹ U.S. Department of Energy, "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste," January 26, 2013.

⁴⁰ Blue Ribbon Commission on America's Nuclear Future, "Report to the Secretary of Energy," January 2012.

⁴¹ Dominion Energy Kewaunne, Inc., Kewaunee Power Station Post-Shutdown Decommissioning Activities Report, February 26, 2013. <https://www.nrc.gov/docs/ML1306/ML13063A248.pdf>

⁴² Scientific Analysis/Calculation Administration Change Notice, ANL-DOO-NU-000001, Screening Analysis of Criticality Features, Events, and Processes for License Application, Yucca Mountain Project, 2008. <https://www.nrc.gov/docs/ML0907/ML090720250.pdf>

Storage systems must be designed to allow ready retrieval of spent fuel, high level radioactive waste, and reactor-related GTCC [greater-than-class C] waste for further processing or disposal. ⁴³

The canisters used in the US were approved by the NRC but were never actually designed for ready retrieval of spent fuel. So little attention was paid to corrosion issues that degradation including the neutron absorber material in the canisters as well as spent fuel pool racks has occurred and in just a few years. The majority of currently loaded spent nuclear fuel canisters in the US used boron carbide with aluminum, known as Boral. Despite optimism by repository researchers for this type of neutron absorber to last for thousands of years, ⁴⁴ degradation has already been occurring. ⁴⁵

The U.S. Nuclear Waste Technical Review Board (NWTRB) recommended the “design and demonstration of dry-transfer fuel systems for removing fuel from casks and canisters following extended dry storage.” ⁴⁶

It would seem that the NRC may have started to recognize the difficulty involved with grinding open a welded canister, perhaps with a degraded neutron absorber so the criticality was more likely, and somehow deftly preventing the fuel from being exposed to oxygen, while using the shielding of the water in the spent fuel pool, with fuel of the temperature above boiling, and all with virtually no way to inspect the status of the fuel or the neutron absorber in the canister, while assuring that the fuel remained subcritical and was not further damaged during the transfer of fuel.

A study updated in 2019 by the Department of Energy confirms that the NRC had no documented evaluation of the consequences of spent nuclear fuel canister failure. The NRC has prepared the draft Environmental Impact Statement for the proposed Holtec consolidated interim storage facility in New Mexico without having any documented basis for the consequences of an expected event, leakage of a spent nuclear fuel canister. ⁴⁷

Instead of using thin-walled welded canisters that cannot be adequately inspected or repaired, the Swiss required the use of bolted thick-walled casks. They store them in a building, away

⁴³ B. B. Bevard et al., Oak Ridge National Laboratory, *BWR Spent Nuclear Fuel Integrity Research and Development Survey for UKABWR Spent Fuel Interim Storage*, ORNL/TM-2015/696, October 2015. <https://info.ornl.gov/sites/publications/files/Pub60236.pdf> (discusses U.S. NRC regulations and the issue of spent fuel retrievability from canisters in the U.S.)

⁴⁴ E. Hardin et al., Spent Fuel and Waste Disposition, Prepared for U.S. Department of Energy, Office of Used Nuclear Fuel Disposition, *Investigations of Dual-Purpose Canister Direct Disposal Feasibility (FY14)*, FCRD-UFD-2014-000069 Rev. 1, October 2014. See page 4-1. <https://www.energy.gov/sites/prod/files/2014/10/f19/7FCRDUFD2014000069R1%20DPC%20DirectDispFeasibility.pdf>

⁴⁵ U.S. Nuclear Regulatory Commission, Generic Issue 196. <https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML042670379>

⁴⁶ U.S. Nuclear Waste Technical Review Board, *Evaluation of the Technical Basis for Extended Dry Storage and Transportation of Used Nuclear Fuel*. Arlington, Virginia, 2010. pp. 14 and 125, (at www.nwtrb.gov) as cited in <https://info.ornl.gov/sites/publications/files/Pub60236.pdf>

⁴⁷ U.S. Department of Energy, Spent Fuel and Waste Science and Technology, Gap Analysis to Guide DOE R&D in Supporting Extended Storage and Transportation of Spent Nuclear Fuel: An FY2019 Assessment, SAND2019-15479R, December 23, 2019. <https://www.osti.gov/servlets/purl/1592862>

from ocean salt spray air, for example. They have a hot cell for repackaging a cask if needed. Read more at SanOnofreSafety.org.⁴⁸

The NRC's response has typically been to admit there's a problem while not actually admitting there's a problem. With regard to the inability to retrieve spent nuclear fuel from NRC-licensed canisters, the NRC solution seemed to be to remove the regulation or provide guidance that gives gibberish saying there's no need to inspect canister internals, unless, of course, there's a safety issue.⁴⁹ And forget about opening a welded canister, it would lead to elevated worker radiation exposures. The full extent of the inability to open a spent fuel canister of higher enriched fuel with a potentially degraded neutron absorber in the canister internals isn't really fessed up to.

But the Department of Energy has now for some years investigated the direct disposal of these canisters, rather than remove the fuel from the canisters and repackage them into the more corrosion resistant TAD as stated in Yucca Mountain's license application to the NRC.⁵⁰

The Department of Energy's research during that last decade has been examining the behavior of different geologic mediums including clay-rich (argillaceous) media including shales, hard rock (crystalline or granite), or salt but not much research any more for volcanic "tuff" as found at Yucca Mountain.

The elephant in the room regarding the safety and disposal of the growing number of welded-closed spent nuclear fuel canisters prevalently used by U.S. commercial nuclear power utilities is rarely discussed.

While cutting open these spent nuclear fuel dry storage canisters may be possible, in twenty years of talking about it, the method to use for cutting open the canisters has not been decided. No design has progressed beyond a vague conceptual stage. Nor have the risks been presented.

The U.S. Department of Energy's proposed Yucca Mountain spent fuel and high-level waste repository discussed dry transfer and wet transfer systems for years, and wildly vacillated about the size of spent fuel pools and capability of dry transfer systems, especially in regard to how to repackage commercial spent nuclear fuel received in non-disposal canisters.^{51 52}

⁴⁸ SanOnofreSafety.org webpage "Swiss Solution – Swiss nuclear waste storage systems exceed US safety standards" at <https://sanonofresafety.org/swiss/>

⁴⁹ Federal Register, Fuel Retrievability in Spent Fuel Storage Applications, A Notice by the Nuclear Regulatory Commission on June 8, 2016. <https://www.federalregister.gov/documents/2016/06/08/2016-13569/fuel-retrievability-in-spent-fuel-storage-applications>

⁵⁰ Energy Workshops, 2018 SFWST Annual Working Group Meeting, Las Vegas, Nevada May 22 to May 24, 2018. <https://energyworkshops.sandia.gov/nuclear/2018-sfwst-rd-team-meeting/> See presentation #05 on direct disposal of spent nuclear fuel, <https://energyworkshops.sandia.gov/wp-content/uploads/2018/05/05-Direct-Disposal-of-Spent-Nuclear-Fuel-in-Dual-Purpose-Canisters-RD-Path-Forward-SAND2018-5437-PE.pdf>

⁵¹ P. W. McDaniel et al., Prepared for U.S. Department of Energy by Bechtel SAIC, *Yucca Mountain Project Surface Facilities Design*, November 2002. <https://www.osti.gov/servlets/purl/808023>

⁵² Senate Hearing 109-523, Yucca Mountain Repository Project, May 16, 2006. <https://www.govinfo.gov/content/pkg/CHRG-109shrg29473/html/CHRG-109shrg29473.htm>

In one study performed for the Department of Energy in 2000, two options for cutting open the non-disposable spent nuclear fuel canisters were discussed.⁵³ But neither option included any specific method for the proposed remote cutting operation and the radiological accident risks were not evaluated. The study did acknowledge that determining the specific methods for cutting open the canisters would be a significant task. The range of safety issues associated with cutting open canisters containing high burnup fuel now used by utilities was not developed.

In a study for the Department of Energy published in 2015, eight proposed methods for cutting open non-disposable canisters were evaluated,⁵⁴ indicating that no method has actually been fully designed or used.

And what about the dry transfer system designed for the Idaho National Laboratory that remains to be built? The environmental impact statement (EIS) for the proposed Idaho Spent Nuclear Fuel Facility addressed the need to repackage only very specific Department of Energy spent nuclear fuel: high-temperature gas-cooled Peach Bottom reactor fuel, light-water breeder reactor Shippingport fuel, and research TRIGA fuel.⁵⁵ The easy-breezy EIS assumes away fuel drop events and essentially all accidents.⁵⁶ These fuels are less susceptible to oxidation than typical uranium oxide fuels used by the commercial nuclear power generating industry in the U.S. There are no operations involving large welded closed commercial spent nuclear fuel canisters at the proposed Idaho Spent Fuel Facility designed by Foster Wheeler Environmental Corporation.

In 2010, the U.S. Nuclear Waste Technical Review Board (NWTRB) recommended the “design and demonstration of dry-transfer fuel systems for removing fuel from casks and canisters following extended dry storage.”⁵⁷ But this still hasn’t happened.

In addition to the costs associated with spent nuclear fuel disposal because the industry’s welded canisters were not considered suitable for disposal, the U.S. Nuclear Regulatory Commission has not grappled with the safety ramifications of not being able to retrieve spent fuel from these canisters, should one be damaged.⁵⁸

⁵³ Prepared for U.S. Department of Energy by TRW Environmental Safety Systems Inc., Civilian Radioactive Waste Management System Management & Operating Contractor, *White Paper: Waste Handling Building Conceptual Study*, TDR-WHS-SE-000002 Rev 00, October 2000. <https://www.osti.gov/servlets/purl/893534-wmX91n/>

⁵⁴ Sven Bader et al., *A study of transfer of UNF [used nuclear fuel] from non-disposable canisters – 15388*, WM Symposia, Inc., July 2015. <https://www.osti.gov/biblio/22824303>

⁵⁵ Training, Research, and Isotope reactor fuel by General Atomics (TRIGA) fuel was used in various reactors built by General Atomics and is high enriched fuel. Many of the 1600 TRIGA fuel elements are stored at the Idaho National Laboratory in 2004 when the EIS was written but additional shipping to the INL was also needed.

⁵⁶ U.S. Nuclear Regulatory Commission, *Environmental Impact Statement for the Proposed Idaho Spent Fuel Facility at the Idaho National Engineering and Environmental Laboratory in Butte County, Idaho*, NUREG-1773, 2004. <https://www.nrc.gov/docs/ML0404/ML040490135.pdf> design by Foster Wheeler Environmental Corporation.

⁵⁷ U.S. Nuclear Waste Technical Review Board, *Evaluation of the Technical Basis for Extended Dry Storage and Transportation of Used Nuclear Fuel*. Arlington, Virginia, 2010. pp. 14 and 125, (at www.nwtrb.gov) as cited in <https://info.ornl.gov/sites/publications/files/Pub60236.pdf>

⁵⁸ Read the Environmental Defense Institute December 2020 newsletter, including “Devil in the details of the Standard Contract with the Department of Energy under the NWSA” and “The ‘Nuclear Waste Fund’ fee is no

In a dangerous and exceedingly dishonest way, the NRC has stipulated that aging degradation will not be included in its risk assessment of the canisters, despite known high likelihood, ineffective inspection programs and essentially no means for addressing aging degradation of the dry storage canisters predominantly used by the commercial nuclear industry.

The stainless steel that the canisters are made of has long been known to be vulnerable to aging failures such as chloride-induced stress corrosion cracking. The NRC has even recognized that such events are to be expected and yet continues to officially deem the events “incredible.” What are the potential radiological consequences of spent fuel canister breaches? I’ll discuss that in the next article.

To underscore the extent of the U.S. Nuclear Regulatory Commission’s lack of concern for the cost or even feasibility of its assumptions regarding consolidated interim storage, it is interesting to review the license the NRC granted for the proposed facility in Utah, the Private Fuel Storage facility.

The U.S. Nuclear Regulatory Commission granted a license for interim storage of spent nuclear fuel in Utah, in 2005, to Private Fuel Storage (PFS), on the Goshute Indian Reservation. The facility was fought by the State of Utah and not built. The concerns by the State of Utah included the problem that the Department of Energy in October 2005 had announced a strategy to accept disposal canisters rather than the dual purpose (storage and transportation) canisters to be used at PFS.⁵⁹ The proposed interim storage facility at Utah would not have capability to repackage the canisters to a type approved of by the Department of Energy.

The NRC Licensing Board said that the issue was of no concern for the NRC. **If the canisters required repackaging, then the canisters shipped to PFS in Utah would have to be shipped back to the utilities, at the utilities expense, to repackage the canisters.** To the NRC, the issue did not affect the PFS licensing approval or the environmental impact statement for PFS.⁶⁰

The NRC decided that it was not the NRC’s problem if there was no place to ship the canisters to and no financial resources to ship or repackage the canisters. And the NRC didn’t care if it actually was not possible to safely retrieve the spent fuel from the non-disposable canisters and place the spent fuel into different canisters.

The license was granted to PFS by the NRC only by the NRC refusing to care about the costs, risks and lack of capability to actually repackage the canisters. The NRC just said the problem didn’t exist because the canisters at PFS would be shipped back to the utilities. Those utilities could include stranded fuel sites with no capability to repackage the canisters. This is

longer being collected from commercial nuclear power utilities – because the Department of Energy has no spent fuel disposal program,” at <http://www.environmental-defense-institute.org/publications/News.20.Dec.pdf>

⁵⁹ Yucca Mountain Repository Project, Senate Hearing 109-523, May 16, 2006,

<https://www.govinfo.gov/content/pkg/CHRG-109shrg29473/html/CHRG-109shrg29473.htm>

⁶⁰ In The Matter Of Private Fuel Storage L.L.C., Docket No. 72-22, November 14, 2005, Applicant’s Response to State of Utah’s Motion to Reopen the Record and to Amend Utah Contention Utah UU, Docketed USNRC. ML053260506.

how short-sighted, immoral and outrageous the U.S. NRC is. And the same thing is happening as the NRC prepares to approve consolidated interim storage in New Mexico and Texas.

Ironically, the entire stated reason for the consolidated interim storage proposed at New Mexico and Texas is to repurpose the land where the spent nuclear fuel is currently stored — and this is where the canisters would be sent back to for repackaging or if the license at the interim storage facility was not extended.

The NRC refuses to admit that a canister leak of significant size is credible. There is no way that an environmental impact statement could yield an acceptable result if the NRC was truthful. And the full extent of the damage to the fuel in the canister as the fuel oxidizes over time will “unzip” the cladding and allow fuel pellets to relocate inside the canister. This also makes the criticality risk higher, should a moderator (such as water) enter the canister.

Unlike the radiological consequence evaluation from the 2008 YM Supplement, most NRC radiological release evaluations, assume that the canister leak is very small, releasing only a fraction of the releasable material from the canister and the inhalation continues for 30 days. The duration of 30 days is stipulated by the NRC on the basis that actions will be taken within 30 days to terminate the release.⁶¹ But there is no technically valid basis for concluding that any action can be taken to terminate the release because there is no technology to repair a canister containing spent fuel and no means for removing the spent fuel from the canister. There is no means developed to place a leaking canister into a sealed confinement such as a cask. Nor is there capability to provide adequate heat transfer for the long term with a container-in-a-container approach.

As oxygen enters the canister, any cladding damage will allow the uranium to oxidize. The uranium fuel matrix will swell, further damaging the cladding. It is not clear that NUREG-2224 fuel release fractions are adequate.

For Yucca Mountain evaluations, canister leakage from outdoor storage of aging dry canisters was not evaluated despite the long-term storage of a high number of canisters to allow additional cooling of the canister to limit the thermal loading of the repository.

For Yucca Mountain evaluations, the radiological releases from spent fuel were assumed to occur inside buildings with highly effective HEPA filters, that were assumed to be 0.9999 effective. With the dose evaluated to a receptor (the location of the maximally exposed individual) located miles from the facility, the estimated doses remained less than one rem, but only by ignoring realistic unfiltered radiological release scenarios.

The Department of Energy’s estimated Yucca Mountain pre-closure radiological doses and the NRC’s independent fuel storage installations are stated to have low radiological doses. **But the reality is that these agencies excel at whittling down the radiological doses on paper, while actually exposing the public to much higher, and sometimes lethal, potential accident radiological release doses with their proposed facilities.**

⁶¹ U.S. Nuclear Regulatory Commission, Interim Staff Guidance – 5, Revision 1, Confinement Evaluation, See Attachment to ISG-5 Revision 1, page 11 <https://www.nrc.gov/reading-rm/doc-collections/isg/isg-5R1.pdf>

Past law makers recognized that these so-called “interim” storage locations would take the heat off of finding solutions for permanent waste disposal and they placed limits on the amount of waste that could be placed in interim storage.

The Department of Energy wants to remove these limits and store unlimited amounts of spent fuel at these above ground parking lot dumps.

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system? The Department of Energy has usually used the philosophy of adding to the radiological contamination of already contaminated sites. But the DOE should not be adding to the radiological contamination of areas already contaminated, such as the State of Nevada and the nuclear weapons testing conducted there. **The DOE should catalog, for consent-based siting, all of the radiologically contaminated sites around the U.S.** This would include nuclear fuel mining, milling, enrichment sites, sites for uranium purification like St. Louis, MO and various facilities in Ohio; this would include all weapons related facilities and federal laboratories; this would include naval shipyards; and commercial nuclear power plants. Let people see the list of these areas and how many curies were released from key sites.

Where past historical releases have been underestimated, DOE should update these estimates and the update the estimated doses to the public.

At the Idaho National Laboratory, formerly the Idaho National Engineering and Environmental Laboratory, the Idaho National Engineering Laboratory, and the National Reactor Testing Station, historical releases were monitored yet not actually characterized as to what and how many curies were released. When asked by the governor in 1989 to provide an estimate of the radionuclides released from routine operations and accidents, the Department of Energy issued the “INEL Historical Dose Evaluation.”⁶² ⁶³ It has been found to have underestimated serious releases by sometimes 10-fold. Furthermore, the past environmental monitoring used all along to claim no significant releases had occurred were not used in the INEL Historical Dose Evaluation. The environmental records that could have been used against the Department of Energy or its contractors were destroyed.

The Center for Disease Control commenced reviewing the DOE’s radiological release estimate that were the basis for denying that any epidemiological study was needed in Idaho communities near the site. The CDC in 2007 issued its review of the 1989 study and found many

⁶² US Department of Energy Idaho Operations Office, “Idaho National Engineering Laboratory Historical Dose Evaluation,” DOE-ID-12119, August 1991. Volumes 1 and 2 can be found at <https://www.iaea.org/inis/inis-collection/index.html>

⁶³ Environmental Defense Institute’s comment submittal on the Consent-based Approach for Siting Storage for the nation’s Nuclear Waste, July 31, 2016. <http://www.environmental-defense-institute.org/publications/EDIXConsentFinal.pdf>

releases, some of the largest ones, underestimated by a factor of 7.⁶⁴ Errors causing underestimation of the INL releases continue to be found as energy worker compensation studies have continued. The INL was originally called the National Reactor Testing Station, later called the Idaho Engineering Laboratory, and then the Idaho National Engineering and Environmental Laboratory before being named the Idaho National Laboratory.

The estimates of the 1991 INEL Historical Dose Evaluation⁶⁵ continue to be found in error and to significantly underestimate what was released.^{66 67 68} Theoretical and idealized modeling of the releases were used for estimating the releases for the 1991 INEL HDE without using environmental monitoring to confirm the estimates — except for the 1961 SL-1 accident in which the environmental monitoring showed that the **theoretical modeling had underestimated the release**. In fact, many of the environmental monitoring records were deliberately destroyed before the 1991 report was released.⁶⁹ INL airborne releases included a long list of every fission product that exists including iodine-131, long-lived I-129, tritium, strontium-90, cesium-37, plutonium, and uranium.

The source documents for the INEL HDE are in fact part of the Human Radiation Experiments collection of DOE documents. Why? Because there was enough information available for the DOE to know that showering nearby communities and their farms and milk cows with radiation really was likely to be harmful to their health. The INL (formerly the NRTS, INEL and INEEL) takes up dozens of volumes of binders in the DOE's Human Radiation Experiments collection and that isn't including the boxes of documents no one can get access to or the records that were deliberately disposed of.⁷⁰

⁶⁴ Center for Disease Control, CDC Task Order 5-2000-Final, Final Report RAC Report No. 3, by Risk Assessment Corporation, October 2002. <https://www.cdc.gov/nceh/radiation/ineel/to5finalreport.pdf>

⁶⁵ US Department of Energy Idaho Operations Office, "Idaho National Engineering Laboratory Historical Dose Evaluation," DOE-ID-12119, August 1991. Volumes 1 and 2 can be found at <https://www.iaea.org/inis/inis-collection/index.html> p. 40

⁶⁶ Risk Assessment Corporation, "Identification and Prioritization of Radionuclide Releases from the Idaho National Engineering and Environmental Laboratory," October 8, 2002, <https://www.cdc.gov/nceh/radiation/ineel/to5finalreport.pdf> See p. 117, 118 for SL-1.

⁶⁷ SENES Oak Ridge, "A Critical Review of Source Terms for Select Initial Engine Tests Associated with the Aircraft Nuclear Program at INEL," Contract No. 200-2002-00367, Final Report, July 2005. <http://www.cdc.gov/nceh/radiation/ineel/anpsourceterms.pdf> See p. 4-67 for Table 4-13 for I-131 estimate for IET's 10A and 10B and note the wrong values for I-131 are listed in the summary ES-7 table.

⁶⁸ CDC NIOSH, "NIOSH Investigation into the Issues Raised in Comment 2 for SCA-TR-TASK1-005," September 3, 2013. <https://www.cdc.gov/niosh/ocas/pdfs/dps/dc-inlspcom2-r0.pdf> See p. 3 stating various episodic releases underestimated by the INEL HDE: IET 3, IET 4 and IET 10.

⁶⁹ Chuck Broschous, Environmental Defense Institute Report, "Destruction and Inadequate Retrieval of INL Documents Worse than Previously Reported," Revised September 1, 2018. <http://environmental-defense-institute.org/publications/DocDestruction.pdf>

⁷⁰ February 1995, the Department of Energy's (DOE) Office of Human Radiation Experiments published *Human Radiation Experiments: The Department of Energy Roadmap to the Story and Records* ("The DOE Roadmap"). See also the INL site profile on Occupational Environmental Dose: <http://www.cdc.gov/niosh/ocas/pdfs/tbd/inl-anlw4-r2.pdf>) Most of the documents in the DOE's Human Radiation Experiments collection remain perversely out of public reach. Documents are said to be stored at the INL site, out of state in boxes, [Good luck with getting these documents via the Freedom of Information Act] and in the National Archives. I found that retrieving documents from the National Archive would require extensive fees for searches and copying. Where is the transparency in creating a document collection that cannot be viewed by the public?

The DOE can look to see if any communities have missed out on radiological contamination associated with nuclear fuel, nuclear weapons, nuclear research, nuclear power, and nuclear research. Should DOE's proposed consolidated storage be in the less contaminated sites in order to ensure equity? Or should DOE's proposed consolidated storage be in already contaminated sites, such as New Mexico with the Waste Isolation Pilot Plant (WIPP) for defense waste, the nuclear weapon testing of the first atomic bomb, and the Los Alamos National Laboratory releases? It seems that DOE tries to do both: sharing as much radioactive contamination with all communities as it can, while also preferring to cause more extensive contamination to already contaminated states. Is this social equity? The DOE, after cataloging with up-to-date historical radiological releases all locations in the U.S. should ask U.S. citizens if it was worth it. Perhaps DOE may consider the social justice equation balanced by contaminating every square inch of the U.S. and by harming the health of U.S. citizens more equally. Or perhaps DOE may consider the equation optimized by contaminating fewer people but by a larger amount, which is what it chose when siting its research facilities like the Idaho National Laboratory in sparsely populated regions. Actually, either choice is an immoral choice.

2. *What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?* The problem of consolidated spent fuel storage is that the one or two affected states can be bullied by the vote of the rest of the states getting rid of their nuclear waste by sending it to these one or two designated consolidated storage sites. Co-locating nuclear waste with clean energy technologies makes for propaganda and that's all. And let me very clear: providing money for clean energy technologies would not mean providing money for nuclear energy. Nuclear fission does not release carbon, but nuclear energy produces radioactive waste that we don't know how to isolate from the biosphere for millennia.

3. *To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?* The progress on establishing a permanent repository has everything to do with a consent-based approach based on informed consent. As was recognized long ago, the DOE is interested in creating the perception of progress on the waste storage and disposal problem. With the millions and billions of dollars DOE has been generously doling out on every conceivable nuclear reactor design and yet no progress on waste disposal, it is clear where the DOE's priorities are. The DOE's priorities are not on safely isolating nuclear fuel and high-level waste from the biosphere. DOE stores spent nuclear fuel and powdery calcine high-level waste in a known flood plain at the Idaho National Laboratory. The DOE's priorities are not on safely managing its nuclear fuel and high-level waste. The Idaho National Laboratory has no facility for repackaging its spent nuclear fuel and no disposal facility to send this waste to. And the DOE's priorities are not on protecting the public, workers or the environment, despite what might be claimed by DOE. For informed consent, the public and stakeholders need to understand how often DOE's commitments are not met and how often DOE's own regulations are ignored.

4. *What other issues should the Department consider in developing a waste management system?* The planet is precious. Human life is precious. Radioactive waste is a tremendous threat to both. A waste management system built on the underestimation of health harm from chronic wide-

spread contamination in air, water, soil and food is not protective. It is a lie. Consent-based siting of interim storage, or a permanent repository cannot be based on lie.

Some experts who have studied geology and spent fuel (and high-level waste) disposal have come to the conclusion that the waste cannot be adequately isolated from the biosphere. They advocate, basically, finding a hole and shoving it in. It will be better than leaving the waste where it is. But while that might be what we are facing, the insanity of making more radioactive waste is immoral.

The Department of Energy's and the nuclear industry's radiation protection standards are not protective of human health. But the nuclear industry knows that tightening the radiation protection standards to lower the allowable dose to workers or the public will increase costs.

Often radionuclides with low curie levels dominate the harm to human health from radioactive waste disposal. So, when DOE states an overall curie level without stating which radionuclides and their specific curie levels, neither the radiotoxicity nor the longevity of the radioactive waste has been indicated.

As far back as 1977, the U.S. Environmental Protection Agency recognized that continued exposure over substantial portions of a lifetime near 100 mrem per year should be avoided, read more in the TENORM report.⁷¹ In 1977, it was assumed by the ICRP that the risk of fatal cancers was 0.0001 per rem (or 1.0E-5 per millisievert in SI units). Various radiation regulations were based on this assumption. It was recognized by 1994 that the fatal cancer risk was higher, at 0.0005 per rem. Even the ICRP currently recognizes that the fatal cancer risk from ionizing radiation is now at least 0.0006 per rem. Independent experts such as John W. Gofman, M.D., have long recognized that the fatal cancer risk was higher than 0.0001 fatal cancers per rem.

In 1990, John W. Gofman's review of the atomic bomb effects on Japanese survivors predicted 0.0026 fatal cancers per rem,⁷² which is over 4 times higher than the current Department of Energy fatal cancers per rem value of 0.0006. But even Gofman's prediction would underestimate the cancer risk from internal radiation, such as the iodine-129, strontium-90, cesium-137, americium-241, plutonium-239, and others, which make up most of the radiation dose from ongoing Idaho National Laboratory airborne radiological releases.

Although not always delineated as "effective" whole-body radiation doses, the dose estimates in millirem (mrem) that are provided by the Department of Energy and the Nuclear Regulatory Commission (NRC) are given only in "effective" whole-body dose.

⁷¹ National Research Council, Committee on Evaluation of EPA Guidelines for Exposure to Naturally Occurring Radioactive Materials. Evaluation of Guidelines to Exposures to Technologically Enhanced Naturally Occurring Radioactive Materials. Washington DC, National Academies Press, 1999. See page 108. <https://www.nap.edu/catalog/6360/evaluation-of-guidelines-for-exposures-to-technologically-enhanced-naturally-occurring-radioactive-materials> and chapters at <https://www.nap.edu/catalog/6360/evaluation-of-guidelines-for-exposures-to-technologically-enhanced-naturally-occurring-radioactive-materials#toc>

⁷² John W. Gofman, M.D., Ph.D., Committee for Nuclear Responsibility, Inc., "Radiation-Induced Cancer from Low-Dose Exposure: An Independent Analysis," 1990. See more in the August 2021 Environmental Defense Institute newsletter.

It is vital for the public and community leaders to understand the distortion of “Effective Whole-Body Doses” in millirem, which are the typical focus of routine emissions, disposal facility performance, transportation accidents or other accidents involving nuclear materials. The Department of Energy and the NRC often did not consider organ doses which may far exceed the levels from natural background.

The non-physical concept of “effective” whole body doses does not provide meaningful doses for estimating fatal cancer risk because the organ absorbed doses are unstated. In addition, the basis for assigning importance of various organs or tissues to the contribution to cancer mortality is based primarily on the external gamma dose received by survivors of the 1946 atomic bombing of Japan and it tells nothing about the cancer risks when radionuclides are inhaled or ingested and incorporated into the body. Cesium-137 mimics potassium, strontium-90 mimics calcium, plutonium-239 mimics iron, etc.

Even with accounting for the clearance of the radionuclide from the body and accounting for the tendency for the radionuclide to accumulate in certain organs such as the thyroid or in bone tissue — the harm from internal radiation is greater than from external radiation and is not accounted for by the nuclear industry’s International Committee on Radiological Protection (ICRP) models because of their reliance on reviewing the radiation harm from external radiation.

The members of the ICRP are mainly nuclear weapons industry-funded folks who don’t actually understand human biology. Anyone not sticking to the nuclear industry agenda would be booted out, sooner or later. The ICRP has no responsibilities to protect human health what-so-ever.

An “effective” dose in rem builds into the rem estimate various multipliers that lower the rem value based on nuclear promotor’s opinions of the cancer mortality effect of radiation to various parts of your body. And this is in addition to the multipliers regarding the type of radiation, the *equivalent* dose, that increase the dose from alpha radiation and neutron exposure over that of gamma exposure.

The “effective” rem dose is lowered before the ICRP’s low-balled cancer mortality rate is even applied. Effective whole-body dose in rem (or millirem which is one thousandth of a rem) starts off with an estimate of absorbed dose but then keeps reducing and further reducing the estimated dose on the basis on ICRP opinion of the likelihood of that organ to cause cancer mortality based on external exposure. Then ICRP sums the reduced organ doses, again weights the organs to reduce their importance and thus the black box spits out an “effective” whole body dose.

This method for estimating the effective whole-body dose had actually originally been called **the doubly-weighted organ doses model** or construct, according to a 2017 article by Fisher and Fahey on *Appropriate Use of Effective Dose in Radiation Protection and Risk Assessment*.⁷³ For additional information about how misleading the “effective dose” is, read *Burdens of Proof* by

⁷³ Darrell R. Fisher and Frederic H. Fahey, *Health Phys.*, “Appropriate Use of Effective Dose in Radiation Protection and Risk Assessment,” August 2017, PMID: 28658055 and <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5878049/>

Tim Connor, Energy Research Foundation, 1997 regarding the multiple failures to attribute Hanford radiological releases to the thyroid cancers in the region.

The Department of Energy embraces only the effective whole-body dose while ignoring the far higher organ doses, such as the absorbed dose to the thyroid from iodine-131, iodine-129, americium-241 and other radionuclides.

The Department of Energy tries to tell people they really don't need a healthy thyroid because people don't often die of thyroid cancer. But, a healthy thyroid is very important to the developing fetus/embryo in utero.

In Idaho, the rates of cancer for children continue to be elevated, especially in counties surrounding the Idaho National Laboratory. The incidence of thyroid cancer is double in the counties surrounding the INL and double that of all other counties in Idaho and double the rates for the country from the SEER database. This is a consistent result over a decade. As thyroid cancer incidence was climbing everywhere, it has been consistently double in the counties surrounding the INL.

In Idaho, the Department of Energy, while accepting lower tabulated radiation doses and focusing on whole-body doses exclusively, has remained silent on the increased thyroid cancer incidence rates from various alpha emitters, and especially americium-241. Due to the low tissue weighting value, whole body dose estimates are not affected much by the elevated thyroid doses.

Bonneville County, where Idaho Falls is located, has double the thyroid cancer rate of the US and double the rate compared to the rest of Idaho, based on the Cancer Data Registry of Idaho (CDRI) for the year 2017.⁷⁴ See Table 1.

Table 1. Bonneville County thyroid cancer incidence rate compared to the rest of Idaho, 2017.

Cancer type	Sex	Rate in Bonneville County	Adjusted Rate in Bonneville County	Rate for remainder of Idaho
Thyroid	Total	28.2	30.7	14.2
	Male	16.0	17.8	7.4
	Female	40.3	43.5	21.0

Table notes: Rates are expressed as the number of cases per 100,000 persons per year (person-years). Rates are expressed as the number of cases per 100,000 persons per year (person-years). Adjusted rates are age and sex-adjusted incidence rates for the county using the remainder of the state as standard. Data from Factsheet for the Cancer Data Registry of Idaho, Idaho Hospital Association. Bonneville County Cancer Profile. Cancer Incidence 2013-2017. <https://www.idcancer.org/ContentFiles/special/CountyProfiles/BONNEVILLE.pdf>

As the SEER 9 region thyroid incidence peaked at 15.7 per 100,000, and the State of Idaho thyroid incidence average was 14.2 per 100,000, Bonneville County reached thyroid

⁷⁴ C. J. Johnson, B. M. Morawski, R. K., Rycroft, Cancer Data Registry of Idaho (CDRI), Boise Idaho, Annual Report of the Cancer Data Registry of Idaho, *Cancer in Idaho – 2017*, December 2019. <https://www.idcancer.org/ContentFiles/AnnualReports/Cancer%20in%20Idaho%202017.pdf>

cancer rates of 30.9 per 100,000.⁷⁵ But other counties near the Idaho National Laboratory also have elevated thyroid cancer incidence rates: Madison (29.3 per 100,000), Fremont (27.9 per 100,000), Jefferson (28.9 per 100,000), and Bingham (28.6 per 100,000). But let's not forget Butte county. Butte county's thyroid cancer rate of 45.9 per 100,000 puts it in a class by itself. Much of Butte county is within 20 miles of the INL and nothing says radiation exposure like Butte's leukemia rate at 3 times the state rate and myeloma at 5 times the state average rate.

The news headline for the Idaho cancer register report issued in 2018 read that "cancer trends for Idaho are stable."⁷⁶ That is what citizens were supposed to take away from the 2017 cancer rate study in Idaho. Why were citizens not told about any of the cancers in the counties in Idaho that significantly exceeded state average cancer rates and exceeded the rest of the US?⁷⁷

The rates that are double the rest of Idaho and the US in only counties near the Idaho National Laboratory are, I believe, due to the radiological releases from INL and are perhaps aggravated by airborne chemical releases from the INL.

The Department of Energy and the State of Idaho are actively ignoring the likely environmental causes of elevated rates of cancer in the communities surrounding the INL and especially the elevated rates of childhood cancer.

The forty-first annual report of the Cancer Data Registry of Idaho (CDRI) was issued in December 2019 for the year 2017.⁷⁸ While the rate of some cancers decreased, the bad news for the State of Idaho is that the overall rate of cancer incidence continues to increase.

And, very importantly, childhood cancers in Idaho continue to increase. Pediatric (age 1 to 19) cancer increased at a rate of about 0.6 percent per year in Idaho from 1975 to 2017, see <https://www.idcancer.org/pediatriccancer>.

Before the late 1990s, radiation risks to females were generally treated as roughly equal to the radiation risks to males. But by the late 1990s, studies of the survivors of the atomic bombing of Japan in 1945 by the International Commission on Radiation Protection (ICRP) had higher radiation risk harm to women than men, for the same dose. And the studies showed higher cancer risk to children, especially female children, than to adults for the same dose. The National Research Council BEIR VII report issued in 2006 found even higher risks to women and children. See Institute for Energy and Environmental Research (IEER.org) report, *Science for the*

⁷⁵ Environmental Defense Institute February/March 2020 newsletter article "Rate of cancer in Idaho continues to increase, according to Cancer Data Registry of Idaho."

⁷⁶ Brennen Kauffman, *The Idaho Falls Post Register*, "New cancer report on 2017 shows stable cancer trends for Idaho," December 13, 2018.

⁷⁷ <https://statecancerprofiles.cancer.gov/>

⁷⁸ C. J. Johnson, B. M. Morawski, R. K., Rycroft, Cancer Data Registry of Idaho (CDRI), Boise Idaho, Annual Report of the Cancer Data Registry of Idaho, *Cancer in Idaho – 2017*, December 2019. <https://www.idcancer.org/ContentFiles/AnnualReports/Cancer%20in%20Idaho%202017.pdf>

Vulnerable, for additional insight.⁷⁹ (Read more in the August 2020 Environmental Defense Newsletter at Environmental-Defense-Institute.org)

DOE actively ignores the current scientific evidence of radiation health harm. The Department of Energy's accepted modeling of health risk from radionuclide emissions (routine or from accidents) actively ignores diverse, compelling human epidemiology. I have been told that the reason is "that somebody high up has decided that the benefit of changing the radiation protection standards isn't worth the cost." This basic description comes from university professors and INL lab directors. Basically, the Department of Energy has decided that protecting your health, or your child's health or protecting human beings in the future from its growing inventory of radioactive waste just isn't worth the cost. It would, after all, increase the cost of nuclear waste disposal and it would require reducing airborne emissions from its facilities.

The Department of Energy has largely thwarted efforts to have epidemiology conducted near the INL.

The NRC cancelled funding of what would have been the first meaningful epidemiology study of health near US nuclear facilities. They claimed it would cost too much (at \$8 million) and take too long.⁸⁰

The US NRC prefers reliance on the 1980s epidemiology study that mixed children and adults and populations near and far from nuclear plants and predictably found no harm.⁸¹ The NRC actively ignores the irrefutable studies from Germany that found increased cancer and leukemia rates of children living near each of the plants.^{82 83 84}

The U.S. NRC knows that if people knew the harm of living near nuclear power plants, just from routine radiological emissions, it would be the end of nuclear energy.

The internal radiation cancer harm is not based on solid epidemiological evidence and there are experts from Karl Z. Morgan to Chris Busby to Jack Valentin that understand that the accepted models may understate the cancer harm by a factor of 10, 100 or more. The nuclear industry continues to ignore the epidemiological evidence that implies tighter restrictions are

⁷⁹ Arjun Makhijani, Ph.D., Brice Smith, Ph.D., Michael C. Thorne, Ph.D., Institute for Energy and Environmental Research, *Science for the Vulnerable Setting Radiation and Multiple Exposure Environmental Health Standards to Protect Those Most at Risk*, October 19, 2006.

⁸⁰ NRC (Nuclear Regulatory Commission) 2010. NRC Asks National Academy of Sciences to Study Cancer Risk in Populations Living near Nuclear Power Facilities. NRC News No. 10-060, 7 April 2010. Washington, DC: NRC. The framework for the study was reported in "Analysis of Cancer Risks in Populations Near Nuclear Facilities; Phase I (2012). See cancer risk study at nap.edu.

⁸¹ NCI (National Cancer Institute) 1990. Cancer in Populations Living near Nuclear Facilities. 017-042-00276-1. Washington, DC: Superintendent of Documents, U.S. Government Printing Office.

⁸² Kaatsch P, Kaletsch U, Meinert R, Michaelis J.. 1998. An extended study of childhood malignancies in the vicinity of German nuclear power plants. *Cancer Causes Control* 9(5):529–533.

⁸³ The study is known by its German acronym KiKK (Kinderkrebs in der Umgebung von Kernkraftwerken): Kaatsch P, Spix C, Schmiedel S, Schulze-Rath R, Mergenthaler A, Blettner M 2008b. Vorhaben StSch 4334: Epidemiologische Studie zu Kinderkrebs in der Umgebung von Kernkraftwerken (KiKK-Studie), Teil 2 (Fall-Kontroll-Studie mit Befragung). Salzgitter: Bundesamt für Strahlenschutz.

⁸⁴ Kaatsch P, Spix C, Schulze-Rath R, Schmiedel S, Blettner M.. 2008. . Leukemia in young children living in the vicinity of German nuclear power plants. *Int J Cancer* 122(4):721–726.

needed. Jack Valentin, former chair of the International Commission on Radiological Protection (ICRP) has admitted, before resigning from the ICRP, that the ICRP's radiation model underpredicts the harm of internal radiation by over a factor 100.

The 100 millirem (mrem) per year all pathways radiation dose limit is greatly emphasized by the Department of Energy as the dose they consider allowable. Air permits may be regulated by the U.S. Environmental Protection Agency or by the states, but in either case, the EPA and the state, such as the State of Idaho, will often emphasize that the state cannot regulate Department of Energy radiological emissions. In Idaho, the State of Idaho Department of Environmental Quality will issue an air permit to the Department of Energy based entirely on the DOE's stated radiological release guesses or estimates, the Department of Energy contractors monitoring or lack thereof, and the State will agree to rapid records destruction of radiation monitoring of open-air radioactive waste evaporation ponds that is fully intended to cover up any radiological releases in excess of agreed to quantities.

In the Department of Energy's environmental monitoring reports, it is greatly emphasized that the DOE's derived concentration standards (DCGs) are safe as they imply a dose of 100 mrem per year. By now, you may be starting to understand why 100 mrem per year would actually guarantee a health catastrophe to the health of people, especially children.

Epidemiology that was conducted of INL workers found unexplained elevated levels of certain radiogenic cancers in both radiation and non-radiation workers. The INL-specific study found radiation and nonradiation workers at the Idaho National Laboratory site had higher risk of certain cancers.⁸⁵

The US Nuclear Regulatory Commission and the Department of Energy maintain that their 5 rem/yr worker exposure limit is protective despite compelling scientific evidence to the contrary.⁸⁶ Epidemiology of thousands of radiation workers found elevated cancer risk occurring at doses far below the allowable 5000 mrem/yr.⁸⁷

⁸⁵ "An Epidemiology Study of Mortality and Radiation-Related Risk of Cancer Among Workers at the Idaho National Engineering and Environmental Laboratory, a U.S. Department of Energy Facility, January 2005. <http://www.cdc.gov/niosh/docs/2005-131/pdfs/2005-131.pdf> and <http://www.cdc.gov/niosh/oerp/ineel.htm> and Savannah River Site Mortality Study, 2007. <http://www.cdc.gov/niosh/oerp/savannah-mortality/>

⁸⁶ "Health Risks from Exposure to Low Levels of Ionizing Radiation BEIR VII – Phase 2, The National Academies Press, 2006, http://www.nap.edu/catalog.php?record_id=11340 The BEIR VII report reaffirmed the conclusion of the prior report that every exposure to radiation produces a corresponding increase in cancer risk. The BEIR VII report found increased sensitivity to radiation in children and women. Cancer risk incidence figures for solid tumors for women are about double those for men. And the same radiation in the first year of life for boys produces three to four times the cancer risk as exposure between the ages of 20 and 50. Female infants have almost double the risk as male infants.

⁸⁷ Richardson, David B., et al., "Risk of cancer from occupational exposure to ionizing radiation: retrospective cohort study of workers in France, the United Kingdom, and the United States (INWORKS), BMJ, v. 351 (October 15, 2015), at <http://www.bmj.com/content/351/bmj.h5359> Richardson et al 2015] (And please note that studies of high leukemia risk in radiation workers and of ongoing studies to assess health effects of high and low-linear energy transfer internal radiation must also be studied in addition to this one on external radiation.)

Radiation workers are still wrongly told that there is no evidence of damage to DNA or genetic effects from radiation exposure to humans. DOE's radiation workers are not told of the infertility and increased risk of birth defects from radiation.

The DOE's and the NRC's radiation dose limit for workers is not protective. The community leaders who invite a "interim" spent fuel storage facility to their community need to acknowledge the inadequacy of the 5,000 mrem/yr limit to actually protect adult radiation workers. Also, communities need to know that there are no programs to assist radiation workers who work at NRC-licensed facilities, as the consolidated storage facility would likely be. There is an illness compensation program for certain Department of Energy contractor workers, but this does not apply to NRC-licensed facilities.

Spent nuclear fuel canisters emit high gamma doses and high neutron doses. The harm from neutron dose can be particularly harmful for gonads and may not be adequately monitored, particularly by emergency responders. Neutron dose can be high even if gamma rays are shielded. Neutron dose is difficult to monitor and the biological damage which depends on the neutron energy levels is only guessed at. Neutron shielding in transportation accidents or other configurations may be damaged. Fire or age-related degradation can damage the neutron shielding and so this is primarily an issue for radiation workers and emergency responders. The biological endpoint focus for the Department of Energy is cancer mortality and not the increased harm to reproductive health.

The public as well as radiation workers need to keep in mind that, despite what they may have been taught:

- The cancer risk is not reduced when radiation doses are received in small increments, as the nuclear industry has long assumed.⁸⁸
- Despite the repeated refrain that the harm from doses below 10 rem cannot be discerned, multiple and diverse studies from human epidemiology continue to find elevated cancer risks below 10 rem and from low-dose-rate exposure.⁸⁹
- The adverse health effects of ionizing radiation are not limited to the increased risk of cancer and leukemia. Ionizing radiation is also a contributor to a wide range of chronic illnesses including heart disease and brain or neurological diseases.

The public and radiation workers take cues from their management that they should not be concerned about the tiny and easily shielded beta and alpha particles. DOE-funded fact sheets

⁸⁸ Richardson, David B., et al., "Risk of cancer from occupational exposure to ionizing radiation: retrospective cohort study of workers in France, the United Kingdom, and the United States (INWORKS), *BMJ*, v. 351 (October 15, 2015), at <http://www.bmj.com/content/351/bmj.h5359> Richardson et al 2015. This cohort study included 308,297 workers in the nuclear industry.

⁸⁹ US EPA 2015 <http://www.regulations.gov/#!documentDetail;D=NRC-2015-0057-0436>. For important low-dose radiation epidemiology see also John W. Gofman M.D., Ph.D. book and online summary of low dose human epidemiology in "Radiation-Induced Cancer from Low-Dose Exposure: An Independent Analysis," Committee for Nuclear Responsibility, Inc., 1990, <http://www.ratical.org/radiation/CNR/RIC/chp21.txt> And see EDI's April 2016 newsletter for Ian Goddard's summary and listing of important human epidemiology concerning low dose radiation exposure.

often spend more verbiage discussing natural sources of radiation than admitting the vast amounts of radioactive waste created by the DOE. The tone and the meta-message from the DOE, the nuclear industry, is that if you are educated about the risks, then you'll understand that the risks are low. Yet, these agencies continue to deny the continuing accumulation of compelling and diverse human epidemiological evidence that the harm of ingesting radionuclides is greater than they've been claiming.

Radiation worker training programs are typically horribly inadequate. In radworker training, there may be discussion of the fact that international radiation worker protection recommends only 2 rem per year, not 5 rem per year. There is no mention of recent human epidemiology showing the harm of radiation is higher than previously thought and at low doses, below 400 mrem annually to adult workers, increased cancer risk occurs.⁹⁰

There is no mention of the oxidative stress caused as ionizing radiation strips electrons off atoms or molecules in the body at energies far exceeding normal biological energy levels. And there is no discussion explaining the harm of inhaling or ingesting radioactive particles of fission products such as cesium-137, strontium-90, or iodine-131; of activation products such as cobalt-60; or transuranics such as plutonium and americium; or of the uranium itself.

The biological harm that ionizing radiation may cause to DNA is mentioned sometimes but it is emphasized that usually the DNA simply are repaired by the body. And the training to radiation workers will mention that fruit flies exposed to radiation passed genetic mutations to their offspring but workers are told that this phenomenon has never been seen in humans even though, sadly, the human evidence of genetic effects has continued to accumulate. Birth defects and children more susceptible to cancer are the result.

Gulf War veterans who inhaled depleted uranium have children with birth defects at much higher-than-normal rate. The same kinds of birth defects also became prevalent in the countries where citizens were exposed to depleted uranium. There are accounts to suggest that the actual number of birth defects resulting from the World War II atomic bombs dropped on Japan and by weapons testing over the Marshall Islands have been underreported. The Department of Energy early on made the decision not to track birth defects resulting from its workers or exposed populations. But people living near Hanford and near Oak Ridge know of increased birth defects in those communities.

The nuclear industry, including the Department of Energy, is wrong to use the International Commission on Radiological Protection (ICRP) treatment of heritable disease. While the ICRP continues to say that "Radiation induced heritable disease has not been demonstrated in human

⁹⁰ Richardson, David B., et al., "Risk of cancer from occupational exposure to ionizing radiation: retrospective cohort study of workers in France, the United Kingdom, and the United States (INWORKS), *BMJ*, v. 351 (October 15, 2015), at <http://www.bmj.com/content/351/bmj.h5359> Richardson et al 2015 This cohort study included 308,297 workers in the nuclear industry.

populations,” Chris Busby writes that evidence of genetic effects *has* been found in humans and at very low radiation doses.^{91 92}

Robin Whyte wrote in the *British Medical Journal* in 1992 about the effect in neonatal (1 month) mortality and stillbirths in the United States and also in the United Kingdom. The rise in strontium-90 from nuclear weapons testing from 1950 to 1964 has been closely correlated, geographically, with excess fetal and infant deaths. The doses from strontium-90 due to atmospheric nuclear weapons testing were less than 50 millirem (or 0.5 millisievert), according to the Chris Busby. Radioactive fallout from atmospheric nuclear weapons testing would not only include strontium-90, it would include iodine-131, tritium, cesium-137, and other radionuclides, including plutonium.⁹³ The extent of the nuclear weapons testing immorality continues to astound me and I applaud the work being done to reduce the risk of human extinction from nuclear weapons.⁹⁴

The ICRP maintains that human evidence of genetic effects due to radiation does not exist. The ICRP then uses the study of external radiation on mice to estimate the heritable risks for humans. One study was conducted using internal radionuclides on mice and the study noted that “detailed research on internal radiation exposure has hardly ever been reported in the past.”⁹⁵

This limited study of microcephaly in mice found that far lower doses of internal radiation caused the same effect as higher doses of external radiation.

It has been known now for a few decades that radiation exposure to the developing embryo and fetus “can cause growth retardation; embryonic, neonatal, or fetal death; congenital malformations; and functional impairment such as mental retardation.”⁹⁶

In 2007, the International Commission of Radiological Protection (ICRP) lowered its estimate of the risk of genetic harm of congenital malformations by 6-fold, from 1.3E-4/rem to 0.2E-4/rem. Based on the belief that the study of the Japanese bomb survivors did not detect

⁹¹ Chris Busby, *The Ecologist*, “It’s not just cancer! Radiation, genomic instability and heritable genetic damage,” March 17, 2016. <https://theecologist.org/2016/mar/17/its-not-just-cancer-radiation-genomic-instability-and-heritable-genetic-damage>

⁹² Chris Busby, Scientific Secretary, European Committee on Radiation Risk, Presentation, *Radioactive discharges from the proposed Forsmark nuclear waste disposal project in Sweden and European Law*, September 8, 2017. Online pdf 646_Nacka_TR_M1333-11_Aktbil_646_Christopher_Busby_presentation_170908

⁹³ R. K. Whyte, *British Medical Journal*, “First day neonatal mortality since 1935: re-examination of the Cross hypothesis,” Volume 304, February 8, 1992. <https://www.bmj.com/content/bmj/304/6823/343.full.pdf>

⁹⁴ Jackie Abramian, *Forbes Women*, “After Her Nuclear Disaster Dress Rehearsal, Cynthia Lazaroff Has A Wake-Up Call For Our World As We Sleepwalk Into Nuclear Extinction,” September 21, 2021. <https://www.forbes.com/sites/jackieabramian/2021/09/21/after-her-own-nuclear-disaster-dress-rehearsal-cynthia-lazaroff-has-a-wake-up-call-as-our-world-sleepwalks-into-nuclear-extinction/?sh=6a22151d62e2> Lazaroff has founded NuclearWakeUpCall.Earth due to her concern over nuclear weapons. “There are nearly 13,500 nuclear warheads in current arsenals of nine nuclear-armed states. That the U.S. has more nuclear warheads than hospitals should be a wake-up call,” says Lazaroff.

⁹⁵ Yukihisa Miyachi, J-STAGE, “Microcephaly Due to Low-dose Intrauterine Radiation Exposure Caused by 33P Beta Administration to Pregnant Mice,” 2019 Volume 68 Issue 3 Pages 105-113. https://www.jstage.jst.go.jp/article/radioisotopes/68/3/68_680303/article/-char/en

⁹⁶ Eric J. Hall, *Radiobiology for the Radiologist*, 5th ed., 2000, p. 190.

genetic effects, **the ICRP genetic effect estimate for humans is based on studies of external radiation of mice.**

The ICRP estimate of risk of congenital malformations is a fraction of its predicted cancer risk for cancer mortality (or latent cancer fatality). The ICRP latent cancer fatality risk was $5.0\text{E-}4$ LCF/rem (1991 estimate), close to the cancer mortality rate used in the Department of Energy's Versatile Test Reactor EIS of $6.0\text{E-}4$ LCF/rem.⁹⁷

While the studies of genetic injury to the Japan bombing survivors declared that they found no evidence of genetic damage, other researchers have found those studies to have been highly flawed. A report published in 2016 by Schmitz-Feuerhake, Busby and Pflugbeil summarizes numerous human epidemiology studies of congenital malformations due to radiation exposure.⁹⁸

The 2016 report disputes the ICRP genetic risk estimate and finds that diverse human epidemiological evidence supports a far higher genetic risk for congenital malformations. **Nearly all types of hereditary defects were found at doses as low as 100 mrem.** The pregnancies are less viable at higher doses and so the rate of birth defects appears to stay steady or falls off at doses above 1000 mrem or 1 rem. The 2016 report found the excess relative risk for congenital malformations of 0.5 per 100 mrem at 100 mrem falling to 0.1 per 100 mrem at 1000 mrem.

The 2016 report's result for excess relative risk of congenital malformations of 5.0/rem is 250,000-fold higher than the ICRP estimate of $0.2\text{E-}4$ /rem which ICRP appears to assume has a linear dose response. (See the August 2021 Environmental Defense Institute newsletter.)

In summary, the Department of Energy's dose limits are not protective of radiation workers (5,000 millirem per year) or the public (100 millirem per year).

The community leaders who accept "interim" storage in their communities must explain why 5,000 millirem per year doses to the radiation workers and 100 millirem per year to the public is considered protective.

The community leaders who accept "interim" storage in their communities must explain why DOE continues to base its regulations and decisions on the ICRP recommendations and why it considers the very inadequate ICRP models to be acceptable for the protection of human health.

The bottom line is that the nuclear industry and especially the Department of Energy is grossly underestimating the fatal cancer risk of their radiological releases, and ignoring serious adverse health effects such as cancer incidence, heart disease, reduced immune system function, fertility problems, decreased life span, as well as increased rates of infant death and birth defects. And they are also grossly underestimating the risk of genetic effects of ionizing radiation.

⁹⁷ U.S. Department of Energy's Versatile Test Reactor Draft Environmental Impact Statement (VTR EIS) (DOE/EIS-0542) (Announced December 21, 2020). A copy of the Draft VTR EIS can be downloaded at <https://www.energy.gov/nepa> or <https://www.energy.gov/ne/nuclear-reactor-technologies/versatile-test-reactor>. (See discussion in VTR EIS Appendix C, page C-4).

⁹⁸ Inge Schmitz-Feuerhake, Christopher Busby, and Sebastian Pflugbeil, *Environmental Health and Toxicology*, *Genetic radiation risks: a neglected topic in the low dose debate*, January 20, 2016. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4870760/> The 2016 report found the "excess relative risk for congenital malformations of 0.5 per mSv at 1 mSv falling to 0.1 per mSv at 10 mSv exposure and thereafter remaining roughly constant."

exposure prior to conception that are passed on to their children and grandchildren by relying on ICRP's industry-biased recommendations.

The community leaders who invite "interim" storage of spent nuclear fuel into their communities must explain why many of the other known health problems from radionuclide exposure, ingestion and inhalation, in addition to fatal cancers, have been ignored.

The submitter of these comments is Tami Thatcher of Idaho Falls, Idaho. I have a degree in mechanical engineering (BSME) and I worked at the Idaho National Laboratory as a radiation worker and as a nuclear safety analyst with specialty in nuclear reactor probabilistic risk assessment. I write newsletters for the Environmental Defense Institute of Troy, Idaho which entails studying Idaho National Laboratory nuclear facilities, accidents and cleanup, radiation illness compensation, radiation protection standards, and nuclear waste disposal issues. My comment submissions, including this one, are often on my own time and not funded by Environmental Defense Institute. My comment submittals are often not reviewed by Environmental Defense Institute prior to submittal and are not submitted on behalf of Environmental Defense Institute. However, my comment submittals are frequently made available on the Environmental Defense Institute website.

From: Jackie Toth
Sent: Friday, March 4, 2022 7:36 AM
To: Consent Based Siting
Subject: [EXTERNAL] Good Energy Collective Response to "RFI: Consent-Based Siting and Federal Interim Storage"
Attachments: GEC Response to Consent-Based Siting Process RFI.pdf

Dear Dr. Huff:

I am pleased to submit our response (attached) to the Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities.

Good Energy Collective sincerely appreciates the Office of Nuclear Energy's commitment to identifying how best to store spent nuclear fuel on an interim basis through a consent-based process. We are happy to discuss or elaborate on any aspect of our response by meeting, phone, or email.

Best regards,
Jackie Toth

[Redacted]

[Redacted]

Good Energy Collective



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Use caution if this message contains attachments, links or requests for information.



good energy collective

March 4, 2022

Office of Spent Fuel and Waste Disposition
Office of Nuclear Energy
U.S. Department of Energy
1000 Independence Ave SW
Washington, DC 20585

Subject: Good Energy Collective's Response to the U.S. Department of Energy Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities

Dear Dr. Huff:

Good Energy Collective (GEC) is pleased to submit a response to the Request for Information on using consent-based siting to identify federal interim nuclear waste storage facilities.

GEC appreciates the work of the Office of Nuclear Energy (NE) to restart the interim waste storage activities following Congress' direction in the Consolidated Appropriations Act of 2021 (PL 116-260) and its commitment to identifying the best steps forward and integrate consent-based siting into the process.

GEC is pleased that the U.S. Department of Energy (DOE) arrives at this renewal of the consent-based siting conversation having already recognized several key elements. Firstly, DOE has previously identified that a consent-based siting process is more likely to result in the successful identification of locations for storage and disposal facilities.¹ This likelihood has been demonstrated through the success of other consent-based siting efforts domestically and internationally, including for nuclear waste.

¹ U.S. Department of Energy, "Draft Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste," 12 January 2017, 2, <https://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf>.

About Good Energy Collective: GEC is a progressive policy research organization focused on building the progressive case for nuclear energy as an essential part of the broader climate change agenda. GEC works with industry, the administration, Congress, and NGOs across the political spectrum to help shape the future of advanced nuclear technologies to contribute toward an environmentally just climate response.

Secondly, GEC recognizes and appreciates that DOE, in the 2017 draft process, correctly applies the novel conceptualization of “community” as inclusive of the local community, local/state governments, congressional delegations, and affected tribes. In our comments, however, we intentionally delineate between these bodies precisely because this encompassing understanding of “community” is yet uncommon, and because the success of this process will hinge on the participation of each discrete level of community impacted.

Thirdly, DOE has correctly noted that consent-based siting must be flexible and adaptive in order to succeed.² Expecting the unexpected and remaining nimble throughout the process will be crucial to the execution of an interim waste siting process with community consent. Remaining flexible, however, will not preclude the need for significant and proactive planning prior to the first outward-facing engagement the agency undertakes through this process. GEC hopes its comments will support NE in proceeding with consent-based siting in a successful manner.³



Area 1: The Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

GEC first suggests that NE further adopt the Council on Environmental Quality (CEQ)’s longstanding definition of what constitutes a “community,” which is much less geographically bound and takes important historical and communal ties into account.⁴ Specifically, CEQ, as early as 1997 in National Environmental Policy Act guidance, said that “agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect.”⁵ CEQ essentially applied this line of guidance both to the identification of low-income populations and minority populations.

² “Draft Siting Process,” 8.

³ Throughout our comments, we refer to NE as the primary actor in the consent-based siting process, though we recognize that all or some of the process may ultimately be undertaken by an existing or new implementing organization, as DOE has previously recognized.

⁴ U.S. Office of Management and Budget, “Memorandum for the Heads of Departments and Agencies, 20 July 2021, 2, <https://www.whitehouse.gov/wp-content/uploads/2021/07/M-21-28.pdf>.

⁵ White House Council on Environmental Quality, “Environmental Justice Guidance Under the National Environmental Policy Act,” 10 December 1997, 25-6, <https://ceq.doe.gov/docs/ceq-regulations-and-guidance/regs/ej/justice.pdf>.

NE will be able to incorporate social equity and environmental justice into its consent-based siting efforts by making a conscious effort to integrate procedural and distributive justice tenets into its activities.

Procedural justice means ensuring the public has fair access and open opportunities to engage in the decision-making process. A well-constructed consent-based siting process embodies procedural justice. DOE has already identified ways to engage the public and involve them throughout the siting effort in the 2017 Draft Consent-Based Siting Process; our responses below provide additional recommendations on how DOE could further improve on this process.

Activities that embody distributive justice work to spread the benefits and detriments of particular actions more equitably across society—where those whom the government or private companies have shut out of past opportunities for clean energy, employment, and other assets are given the support they need to participate in new opportunities, and where those who have historically experienced disproportionate harm from federal or private action are not further burdened.

Incorporating distributive justice into the interim siting process will require the identification of communities who have been overburdened or underserved in this way. In order to identify these environmental justice communities, GEC recommends that DOE utilize the EJSCREEN tool from the U.S. Environmental Protection Agency (EPA) and the Climate and Economic Justice Screening Tool (currently in beta) developed by the CEQ. DOE should make an effort to ensure that communities it identifies as environmental justice communities are provided with the resources they need to participate in the siting process to the extent the community is interested.

We also recommend that the personnel implementing the interim waste siting process review the Jemez Principles for Democratic Organizing, a set of six tenets that the Southwest Network for Environmental and Economic Justice developed in 1996 to support effective conversations between diverse groups of people.⁶

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Tribal, state, and local governments will be crucial interlocutors in the interim siting process, and the interest and consent of each will be crucial to the success of this effort. One of the contributing factors to the yearslong stalemate in the development of an integrated nuclear waste storage system and the execution of the Nuclear Waste Policy Act (NWPA)'s requirements has been the joint failure, by DOE and Congress, to pursue a waste storage site for which could be demonstrated the presence of wide, deep, and lasting support at every level—from the local community, the local government, and the state government.⁷

⁶ EJ Net, “Jemez Principles for Democratic Organizing,” <https://www.ejnet.org/ej/jemez.pdf>.

⁷ “Draft Siting Process,” 2.

Consent-based waste siting practices offer an opportunity for NE to address this shortfall; GEC urges NE to confront any remaining sense within the department of the inconsequentiality of state laws and state opposition to agency actions. NE must proactively operate under the assumption that state and tribal sentiment and concern is a crucial determinant of the likelihood of a successful nuclear waste siting process.

However, GEC also cautions DOE against automatically relying on taking local government/officials' favorable positions as necessarily representative of the affected community or communities' position. Whether the county or municipal government can be said to speak for the community will vary by location. As Jemez Principle #3 states, "[i]t is important for organizations to clarify their roles, and who they represent," as part of a dialogue between different groups.⁸ After identifying the localities that are interested in learning more about the siting process, NE should consider the feasibility of identifying local community-led organizations and develop ways to give them the ability to learn more and ask questions, too. Once again, NE may want to draw upon CEQ's working understanding of what constitutes a "community," which explains that communities are not uniformly definable by geographic proximity.

In the case of tribal governments, NE should prioritize government-to-government collaboration with tribal nations either proximate to the proposed sites or with connections to the land in and around the proposed site, and seek their technical, cultural, and environmental expertise to help shape decisions and processes.

Throughout the siting process, community groups and individuals must also have opportunities not only to ask questions but to express their concerns. DOE should allow direct community input to play a large role in the final decision-making process on whether to choose a particular site or not. Consent-based processes mean nothing if communities have no way to give a definitive "no" to a project and have that decision be respected.

While DOE will need to make an effort to identify the geographic and/or social boundaries of the community as the department selects the governmental level at which to conduct initial outreach and gauge interest in participation in the consent-based siting process, NE will need to balance depth with feasibility. NE will determine whether initial outreach occurs at the level of the county, city, census-designated place, town, or some combination of these based on the resources available and the desire to cast a broad net. This decision may determine what type of educational tools or hand-raising capabilities DOE might choose to develop to identify interested communities (see response to Question 4).

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

⁸ "Jemez Principles."

NE should consider following part of Sweden's successful playbook in siting nuclear waste by contacting each U.S. county, borough, or parish, and each tribal government and outlining DOE's plans for siting one or more interim waste storage facilities through a consent-based procedure. Specifically, this communication should lay out how the process will proceed in phases, and that interested communities will have the ability to end participation at any time prior to the propagation of a binding agreement.⁹

Throughout our response, we discuss the need to prevent placing a financial burden on communities throughout this process. The Swedish case is instructive: Communities expressed a feeling of exclusion when Sweden placed the feasibility study activities in the hands of outside groups. Subsequently, Sweden addressed this issue by changing tactics; it brought local communities into the feasibility study process and reimbursed them for costs incurred.¹⁰ GEC recommends that NE remain flexible in determining who is best equipped to conduct successful feasibility studies and identifying the extent of involvement that should be sought from the participating communities in the site assessment process.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

GEC identifies six potential impediments to siting temporary waste storage using a consent-based process. These include:

- A. **Insufficient funding.** A particular risk to the success of this endeavor is that Congress will fail to provide NE with sufficient funding to implement the project from start to finish. This failure could stem from budgetary constraints, a shift in congressional priorities, or skepticism in NE's ability to execute the process. The risk of this failure could compound if NE fails to identify for Congress the full extent of its funding requirements to achieve successful implementation of an interim waste storage solution.

Program costs could be substantial. They may include but will not be limited to:

- a. Internal staffing for program implementation;
- b. Contracted staffing for program implementation, including external personnel with experience running a consent-based process; and
- c. Funding for community engagement. Pivotal to the success of a consent-based process will be for NE to fund all or most of the community outreach the agency performs in service of identifying a temporary waste storage solution. We alert NE to the necessity that under this process, no community should bear financial costs that could be conceived as burdensome. We agree with the suggestion from a commenter in the 2017 comment period that DOE should consider

⁹ See: Jessica R. Lovering, Suzanne Baker, and Todd Allen, "Social License in the Deployment of Advanced Nuclear Technology," *Energies* 14 (2021): 4304. <https://doi.org/10.3390/en14144304>.

¹⁰ Ibid.

providing financial and technical support to local communities, as necessary, to facilitate local inclusion and understanding in the siting process.¹¹

To the extent possible, prior to launching the siting process, NE should develop a project budget that accounts for projected outlays for each phase inclusive of funding to help communities engage in the process. NE should communicate clearly and often with Congress on the funding it needs to be successful.

Under existing law, NE is constrained against promising interested communities that it could support them financially through the full duration of the siting process. NE should therefore also identify whether the success of the consent-based siting process will hinge on whether Congress amends the NWPA to allow the department to provide this support to participating communities. GEC notes that NE's argument in favor of legislative updates or additional funding may be strengthened once NE successfully completes the initial phases of the interim siting process up to and including site selection.

- B. **Lack of agency experience with consent-based engagement.** NE should be clear-eyed that this endeavor would be one of its first explicit applications of consent-based siting processes. DOE may ultimately determine that it would be served by bringing in external professionals with experience in consent-based siting, community engagement, and other key “soft-skill” practices to support the agency's process.
- C. **Difficulty in identifying “potentially interested communities.”** NE's search for communities interested in hosting spent fuel on an interim basis could be complicated by a lack of resources for (or infrastructure facilitating) federal-to-community communication. Ultimately, as part of the execution of a consent-based siting process, DOE should determine prior to beginning community consultation whether it would benefit from developing a tool or other “hand-raising” feature for communities to learn about the process and identify themselves as interested in learning more. Without such a feature, NE could run the risk of misapprehending the size of the prospective pool of interested communities as being smaller or larger than the real figure, which could result in the wasting of finite resources or the exclusion of a potentially suitable candidate community. To the extent possible, such a tool would need to be simple and low-effort to use; it should not resemble a formal Request for Proposal, which often represents a financial hurdle for organizations and communities without the money or experience to obtain professional help in submittal. DOE would also need to determine a rollout plan on how to make the necessary local and state officials aware of the tool.

¹¹ U.S. Department of Energy, “Summary of 2017 Public Comments on the Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste,” 22 December 2021, 5, <https://www.energy.gov/sites/default/files/2021-12/ne-summary-public-comments-2017-draft-consent-based-siting-process.pdf>.

- D. **Insufficient trust.** As some commenters noted in response to the public comment period for the 2017 draft process, some communities found past DOE engagement to be lacking in scale or execution.¹² This sense of shortfall is one of the reasons why analysts of the waste stalemate, including those who supported the development of the Blue Ribbon Commission report, favor the creation of a new independent public or private agency to handle spent fuel storage, rather than retain the process within NE or another DOE body.¹³

DOE should make every effort to involve and inform the full set of stakeholders—local communities/community leaders, and local, county and state officials—at each step of the engagement process. To do this, NE will need to identify these individuals and groups and how they can most easily receive the information at each step.

DOE must also iterate to communities that no decisions on the location or type of waste siting have already been made, to assuage suspicions shared in the 2017 comment period that NE is conducting the consent-based siting process as political cover for a premeditated decision on where to site the waste.

- E. **Lack of concurrent progress at the NRC and EPA to propagate necessary regulatory updates.** Slow action by other federal agencies with roles in the nation's nuclear waste siting process, beyond lengthening the process toward eventual interim storage, could also raise questions on the part of communities and states about whether the federal government will be capable of following through on storing waste on an interim basis.

NE should involve NRC and EPA officials in the consent-based siting process, including by inviting them to participate in community-to-government communication, public fora, and other means of engagement with stakeholders, in order to level-set on expectations among all parties.

- F. **The dearth of action on a permanent repository.** NE's ability to implement a consent-based siting process for federal interim waste storage will be hampered by the federal government's continued failure to identify and site one or more permanent geologic repositories for nuclear waste. That the federal government has made virtually no progress toward a long-term repository will absolutely complicate NE's ability to convey to interested communities that the waste in question will in fact be stored temporarily.

¹² "Summary," 1-2.

¹³ At this time, GEC does not proffer an explicit reaction to the opinion, including by commenters in the 2017 comment period, that a new agency or organization is needed to implement the national waste siting process. GEC does, however, note that there are already more than five federal agencies and offices involved in nuclear waste storage, clean-up, and legacy management—all of which do not communicate or coordinate sufficiently, contributing to slowed remediation results and waste solutions for communities. GEC would suggest that DOE take this fact into account when deciding whether to support the addition of a new agency or office to the issue.

GEC urges DOE to communicate with Congress about what the department requires to restart a process toward identifying and siting a permanent repository. NE's ability to press for legislative changes or funding will likely be improved as NE successfully moves through the first phases of the interim siting process.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

Consent-based siting is built upon honesty and trust. NE should be open, honest, and realistic with all participants about the anticipated duration of waste storage at federal interim storage facilities, which means equipping participants with an overview of the history of U.S. nuclear waste siting efforts that have led to the current impasse over a permanent geologic repository. NE should also provide information related to the optimal length of time for interim waste storage; the minimum and maximum possible durations of the interim storage; and the duration of storage that current technologies can safely achieve.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

GEC recommends that NE consider partnering with the Energy Communities Alliance and the Indigenous Environmental Network as it works to develop and refine its consent-based approach to siting interim waste storage facilities.

7. What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

GEC commends DOE for developing a strong set of general design principles for a consent-based process in Section 4 of the 2017 draft process document.¹⁴ Below, we comment on two of these design principles:

1. **Community Well-being:** In order to consider and convey “the social, economic, environmental, and cultural effects” of interim waste storage on a community, DOE should prepare to perform an initial, and then iterative, assessment of these effects, and be open to updating this assessment based on information from communities, states, and other stakeholders on what social and economic benefits and environmental and cultural protections they require or desire.
2. **Transparency:** The implementing agency may want to consider applying an existing (or developing a new) database that enables the tracking of participant input and information about its use or application to the siting process, so that all stakeholders have access to the record of input and know how it is being incorporated.

¹⁴ “Draft Siting Process,” 6-7.

Regarding Section 6 on Siting Considerations, we note that all entities contacted at the beginning of the process should have the opportunity to indicate their interest. However, as part of that initial outreach, NE should make screening tools available (e.g., EJSCREEN, the Climate and Economic Justice Screening Tool, and the STAND tool in development between the University of Michigan Fastest Path to Zero initiative and several national laboratories) so that communities and governments can self-screen, if desired, prior to indicating their interest in learning more.



Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

Central to procedural justice is making sure that stakeholders are actually given the opportunity to participate in the process. For some communities, including some environmental justice communities, all or some of the residents may face challenges in participating, whether due to work or childcare schedules, poor health, or a lack of reliable internet access. Once an initial set of entities has indicated their interest in participating in the interim waste siting process, to the extent possible, NE should consider identifying best practices for engagement with these communities, and further identify how to involve those who face disproportionate challenges in participating, such as by changing meeting times to suit schedules, holding hyperlocal meetings at locations easy for residents to access, distributing flyers, etc.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

As noted above, many smaller communities with comparably smaller budgets have difficulty responding to formal Funding Opportunity Announcements (FOAs) for federal programs, often disadvantaging those whom the programs are intended to help the most. NE should consider providing financial support to communities or localities submitting proposals for the interim storage process. NE could also consider developing a simpler FOA for communities NE identifies as overburdened/underserved.

As DOE identified in the 2017 draft process,¹⁵ community planning or visioning activities could support a successful process in support of interim waste storage. DOE should identify whether it can support these kinds of activities as part of its grantmaking for this endeavor.

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

DOE could facilitate mutual learning and collaboration by:

- Holding informational fora with interested communities to discuss the proposed project and field questions;
- Posting informational materials about the interim waste siting process in one easily identifiable and prominent place on the department's website;
- Ensuring that information is made available in multiple languages, if needed; and
- Hosting conferences that stakeholders from all interested communities could attend, talk to one another, interact with relevant experts, and receive guidance on available participatory tools.

4. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

NE may need to consider contracting with external staff to help implement this program, including external personnel with experience running a consent-based process. To the extent possible, NE may also want to consider contracting with trained mediators or facilitators when the agency conducts local public meetings in service of the siting process.

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

See answers to Area 1 Questions 4, 5, and 7.

In addition, stakeholders at every level should be accorded as clear of an accounting as possible (and as early as possible) of the potential financial costs; changes in worker influx or exodus; and environmental impact that they could face at each prospective step of engagement, including the costs and impacts associated with ultimate site selection. To the extent feasible, NE should identify the potential costs ahead of time for each phase or for the steps in each phase.



¹⁵ "Draft Siting Process," 15.

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

Our recommendations in Area 1 specific to the process for siting interim waste also apply to the development of a national waste management system. Both efforts should work to advance procedural and distributive justice, practice honest and open communication, and entail consistent dialogue with Congress over what legislative changes or funding is necessary to succeed in realizing a socially and environmentally just waste management system.

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

The benefits of co-locating these facilities include supporting a greater number of more diverse jobs beyond those at a waste-only facility—something which may be attractive to a potential host community. Drawbacks of co-location could include a more complex and prolonged siting and approval process.

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

Above, we note that the continued lack of progress in establishing a permanent waste repository will hinder NE's ability to earn community confidence and advance an interim waste storage solution. However, to the extent that restarting a consent-based siting process for interim waste storage is able to show intentional and dedicated action on the part of the government toward developing part of a domestic waste management system, that progress could ultimately give Congress the confidence to further fund the interim siting effort. It could also help break the current impasse and result in solution-finding between the administration and Congress to revisit the NWPA in support of restarting a process toward a permanent repository.

4. What other issues should the Department consider in developing a waste management system?

The application of a consent-based siting process to such a comprehensive and important infrastructure project is a welcome move in the spirit of procedural and distributive justice. GEC anticipates that, because this will be NE's first use of consent-based siting on a project of this size, there will be unanticipated snags throughout the process. To the extent possible, NE must be clear-eyed about its own capability to implement consent-based siting effectively and where it might experience the hardest challenges. One of these challenges is likely to be in staffing the effort. NE should identify the scale and scope of the community engagement it will need to

conduct to succeed in upholding the consent-based process, and then budget accordingly for how much additional staffing support, either internally or contractually, it will need.

Sincerely,

A handwritten signature in cursive script that reads "Jackie Toth".

Jackie Toth
Deputy Director
Good Energy Collective



From: Judy Treichel

Sent: Tuesday, February 22, 2022 2:25 PM

To: Consent Based Siting

Subject: [EXTERNAL] Response to Request for Info from the NV Nuclear Waste Task Force

NEVADA NUCLEAR WASTE TASK FORCE, INCORPORATED

[REDACTED]
L [REDACTED]
[REDACTED]

Non-profit/Public Advocacy
Judy Treichel, Exec. Director
[REDACTED]

February 22, 2022

Dr. Kim Petry,
Acting Deputy Assistant Secretary for Spent Fuel and Waste Disposition
U.S. Department of Energy
1000 Independence Avenue S.W.
Washington DC 20585

Dear Dr. Petry:

The biggest problem that the nuclear industry has is a lack of a means of disposing of its waste. Commercial plants generating electricity continue to pile up waste in cooling pools as well as dry storage outside the reactor. Plants that no longer run are being dismantled and decommissioned and the site can be emptied of everything except for the irradiated or spent nuclear fuel.

Weapons manufacturing facilities also have highly radioactive wastes dating back to the Manhattan Project of the 1940s when the first atomic bombs were produced. Facilities that are both closed and still being used, have never had a permanent disposal site for the many forms of the most dangerous waste they produced.

The Department of Energy (DOE) has begun a process to address the waste problem, but it is the absolute wrong way to go about the task. The DOE has published a: Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities.

In both the federal Nuclear Waste Policy Act of 1982 and the Nuclear Waste Policy Amendments Act that followed in 1987, it is clearly recognized that waste must be disposed of in a geologic repository. It is only after a repository program is in place that the possibility of waste storage, away from the point of generation, is to be contemplated and the reason for any such storage would be an integral part of the disposal process. The only exception to this is the Navy submarine irradiated fuel stored at the Idaho National Laboratory (INL) which is a national security decision and spent nuclear fuel from Three Mile Island that was damaged during the accident at that plant in 1979. That fuel was moved to INL for safety reasons.

Having storage secondary to disposal in the national law makes sense and in the forty years since the passage of the law, we have learned a great deal about why everything that happens to the waste, from the time it is generated, has implications for its disposal.

The Nevada Nuclear Waste Task Force has been involved in every step of the Yucca Mountain project since the day it became a candidate site. We have collected information, attended the meetings held by the DOE and the Nuclear Regulatory Commission (NRC) in addition to participating in exchanges between the two. We have seen the process of the characterization of the Yucca Mountain site various approvals DOE issued and the formation of the license application that was submitted to the NRC. Throughout all those activities, including oversight by the

Nuclear Waste Technical Review Board, it was apparent that the primary consideration at a repository was the waste form – its size, temperature, packaging, placement, etc.

During the more than twenty years that Yucca Mountain was being actively studied and considered as a repository site, there were multiple evolving plans about how and where waste would be packaged. Additionally, it was necessary to know what the waste form would need to be when arriving for disposal, and during the process of permanent emplacement.

Nothing has happened at Yucca Mountain or in consideration of a license for that site for over a decade. It is clear to many independent experts that the site is not suitable and will not contain the waste for the time period necessary. Waste will escape from the proposed repository and be carried to the accessible environment well before the radioactivity has decayed to levels safe for the biosphere.

Yucca Mountain should be declared unsuitable, and the project formally ended. It is not an acceptable site for a repository. It will not do the job necessary, and the people of Nevada will never accept or allow a repository to be built there. But lessons have been learned that will be valuable going forward. A great deal is now known about how to and not to study a proposed site, lessons about packaging have been learned and dealings with the officials and public at any site under consideration in the future must be learned from the Nevada experience.

The one thing that the Nevada Nuclear Waste Task Force believes is a positive step now being considered by the DOE is the intention to seek consent from the public before beginning a new program. It is certainly not clear that DOE knows how to do that but at least the words now exist in DOE documents.

The fatal flaw in the Request for Information being discussed here is that it is not based on the formulation of a new disposal plan for high level radioactive waste and irradiated or spent nuclear fuel. Such a plan may at some point include waste storage at the point of generation, at a repository site or somewhere in-between. Decisions about that cannot be made until a repository site has been found that is situated in a place where the public and their representatives understand what it is, what it does, and have agreed to participate in the process of study, approval, licensing, and operation. The approved design and operation of the repository will dictate everything that will be needed for waste acceptance. All associated parts of the process will follow from that.

Sincerely,


/s/

Judy Treichel
Executive Director

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From: Tuler, Seth
Sent: Wednesday, March 2, 2022 11:52 AM
To: Consent Based Siting; Thomas Webler
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: Tuler and Webler 2022 DOE Comments on RFI.pdf

Please find attached our comments in response to the 2001 Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities.

Seth Tuler
Associate Professor
Co-Director, Global Lab
Co-Director, Boston Project Center
Department of Integrative and Global Studies, Global School
Worcester Polytechnic Institute
Worcester, MA 01609


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Social and Environmental Research Institute

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Contacts:

Dr. Seth Tuler

Research Fellow, Social and Environmental Research Institute

Associate Professor, Dept. of Integrative and Global Studies, Worcester Polytechnic

Institute, Worcester, MA



Dr. Thomas Webler

Social and Environmental Research Institute, Inc.



2 March, 2022

We are submitting comments in response to the RFI published on 1 December, 2021 for *Consent-Based Siting and Federal Interim Storage*.

We are two social scientists that have conducted research on siting of nuclear waste and other hazardous facilities, public participation, and risk governance. We co-authored an article in *Science* magazine in 2011 about the activities of the Blue Ribbon Commission (Rosa et al. 2010; see attached). We have served on many committees of the National Academies of Sciences and advisory boards of federal agencies. We helped prepare commissioned papers for the Blue Ribbon Commission on public and stakeholder engagement and siting facilities in a context of social distrust (Tuler et al. 2011 and Webler et al. 2011), and subsequently consulted to the DOE about the process to develop a recommendations for a consent-based siting process.

Before providing specific comments, we want to clarify how we use the word “consent” and to emphasize the importance of being clear that consent means something specific. It is helpful to be explicit about what consent means to ensure that consent is not reduced to a vague and general meaning of “public acceptance” or “social license to operate,” both terms with severe limitations.

Consent is stronger than either of those concepts. It has a long history in scholarship, professional practice, human rights, democratic theory, and civic life. Relevant frameworks for eliciting principles and practices for *voluntary informed consent* come from medical treatment (McIlwain 2011), research ethics (Faden et al. 1986), large-scale development projects in indigenous communities (Goodland 2004, Owen & Kemp 2014, MacKay 2004,

Environmental Law Institute 2004), and democratic theory (Webler and Tuler 2020). Informed consent requires that decisions be voluntary, that is, without coercion or manipulation – real or perceived. Those being asked to consent should have the power to say “no.” Another important ingredient is that those whose consent is being sought have adequate understanding of risks and benefits. Consent seekers have the responsibility to share relevant information and to convey it in a way that is comprehensible and informs individuals’ decisions. It is also important that consent be acquired prior to a decision (Beauchamp and Childress 2001, Faden et al. 1986).

Consent in the context of medical treatment and research ethics relates to individuals, and these fields have helped inform the idea of community consent. For example, free, prior, informed consent (FPIC) is a notion that has been promoted by the United Nations in the context of large-scale development projects in indigenous communities, including dams, ports, and mines. FPIC is based fundamentally on the concepts of autonomy, self-determination (Sawyer and Gomez 2012, Hanna and Vanclay 2013) and human rights (Owen & Kemp 2014) that we find in medical and research ethics. Key is the belief that a community should decide for itself whether to accept the risks and benefits associated with new infrastructure and be able to negotiate for packages of benefits to off-set risks associated with the project and leave the community better off. Yet at the same time compensation packages should not be coercive, which can occur when there is an unjust distribution of risks or harms where people live in a state of desperation. The exact nature of an FPIC process is dependent on local procedures and institutions, customary law and practice, as well as international guidelines and principles that suggest minimal standards that must be met.

In summary, informed consent – the basis for a consent-based process – requires that:

- consent-givers be autonomous and capable of self-determination;
- issue or express consent voluntarily; and
- understand the risks and benefits of the action being proposed.

Area 3: Interim Storage as Part of a Waste Management System

Area 3, Q3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

Area 3, Q4. What other issues should the Department consider in developing a waste management system?

We understand that the DOE is proceeding with the RFI in response to the Consolidated Appropriations Act of 2021. We also acknowledge that interim storage *may* be an important component of a waste management system and will enable near-term consolidation and temporary storage of spent nuclear fuel. However, we wish to state at the outset that we disagree strongly that initiating a process – and even more so a consent-based process – to site interim storage facilities in the absence of an overall strategy for a comprehensive spent nuclear fuel and high-level waste management system will be unlikely to build trust and confidence with stakeholders and the public. In fact, it may do the opposite and make it harder to craft a process to site one or more repositories that is widely perceived as legitimate and fair.

There is widespread international consensus that the best feasible permanent solution to the problem is deep geological repositories such as WIPP and those being constructed in Finland, and permitted in Sweden and France. A successful waste management system will comprise many interconnected parts and a consent-based process for siting infrastructure for storage and disposal of SNF and HLW cannot be successfully achieved without paying attention to the other parts of the system and their connections. For example, interim storage facilities will have implications for transportation systems and managing risks associated with loading and unloading SNF into and out of different casks designed for storage and transportation. They may also impact the process and commitment to developing deep geologic repositories for to isolate the wastes.

Importantly, in the context of this RFI, the lack of a system-oriented planning approach fundamentally undermines the commitment to a consent-based approach by violating an essential principle of consent - that those giving consent should have a clear and thorough understanding of the risks and benefits to which they are consenting.

The stated goal of DOE in the RFI to seek “input on using a consent-based process to site federal interim storage facilities ... to help develop a consent-based siting process for use in siting federal interim storage facilities, the overall strategy for development and operation of an integrated waste management system, and possibly a funding opportunity” is likely to backfire by starting with a highly controversial small piece of a larger system that is needed and for which the DOE will be unable to ensure the promise of *interim* storage is met.

It is clear to that there is much concern from important stakeholders that consolidated interim storage facilities will become *de facto* long-term storage facilities. This has been understood for a long time, as critics of interim storage facilities have argued that interim storage facilities may morph into *de facto* long-term storage sites in the absence of a successful national geologic disposal program, although this would not be what communities were asked to consent to.

In a research study we have just completed, we inquired into what knowledgeable experts, stakeholders, and activists believe is the appropriate way to design a consent-based siting process for nuclear wastes. We discovered strong disagreements about the timing of seeking a site for a deep geologic repository(ies) (DGR) and seeking site(s) for consolidated interim storage (CIS). Some of our research participants noted that siting a permanent deep geological repository *before* acting on CIS could expose the process to considerable delays as well as the pros and cons of maintaining the existing system. Others noted that attempting to site CIS facilities before or while seeking a permanent repository runs the risk of enhancing distrust and skepticism in the DOE, the NRC, and the Federal Government among stakeholders as well as publics and governments in potential host communities for both the DGR and the CIS facilities.

The RFI states that “DOE anticipates that an interim storage facility would need to operate until the fuel can be moved to final disposal.” Skeptical publics and stakeholders will ask, “When might that be?” The history of federal nuclear waste management is littered with broken promises and inconsistent policies and laws. Trust and confidence in the institutions responsible for managing nuclear waste are weak (Gupta et al. 2020, Tuler et al. 2016). Policy swings accompanying changes in Administrations and Congress are no better. The promises of the Nuclear Waste Policy Act of 1982 survived a mere five years before Congress reneged on their own principles. Recent efforts to change compliance agreements

at DOE-EM sites and float an expansion of WIPP to accept different types and amounts of waste underscores the untrustworthiness of Federal authorities. When parties to a process lack trust and confidence that commitments will be kept interaction is inefficient, understandings are inaccurate, collaborative problem-solving is absent, and agreements lack stability. Informed consent cannot be achieved if what is agreed to can shift.

In our view, Congress is asking DOE to do something that will undermine the larger goal of successfully developing an integrated waste management system in an expedient *and* fair *and* accepted process.

Area 1: Consent-Based Siting Process

Area 1, Q5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

The short answer is that this is impossible. How can the DOE make promises about duration of storage at interim facilities when every promise can be undermined by a new Administration and/or Congress? Again, the promises of the Nuclear Waste Policy Act of 1982 survived a mere five years before Congress reneged on their own principles. There are other examples of promises being undermined or changed in the DOE Environmental Management Program.

Our advice to DOE is to be very honest and not pretend that assurances about plans cannot be changed. A fundamental principle of informed consent is that the consent givers understand the risks and benefits and trade-offs. The risk that interim storage will be longer than hoped (or planned) is real and must be openly and honestly considered by communities voluntarily considering to host a facility.

Area 1, Q4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

This is a complicated question and relates to all questions listed under Area 2: **Removing Barriers to Meaningful Participation**. We believe that addressing them must be done in three ways. First, minimal standards for acceptable procedures to determine community consent should be established. They must be protective of communities that can be taken advantage of. Second, specific procedures that go beyond minimal standards to implement a place-based process should be allowed. Third, agreement on procedures should be developed with potentially impacted communities prior to the initiation of both the general process (for minimal standards) and in specific communities (that are considering proposals for hosting an interim storage facility). We have written about this in two places, which are attached:

Webler, T. and Tuler, S. 2020. Unpacking the idea of democratic community consent, *Journal of Risk Research* 24(1):94-109. Available at:
<https://www.tandfonline.com/doi/full/10.1080/13669877.2020.1843068>

Tuler, S. and Webler, T. 2021. A better way to store nuclear waste: Ask for consent, *Bulletin of the Atomic Scientists*, published online 21 April, 2021. Available at:
<https://thebulletin.org/2021/04/a-better-way-to-store-nuclear-waste-ask-for-consent/>

Barriers and impediments are related to finding procedures for informed consent that are perceived as legitimate and fair. The procedures need to address how to ensure that consent-givers are capable of self-determination, are able to consent voluntarily, and sufficiently understand the risks and benefits of the action being proposed. These also imply that consent seekers provide relevant information in a timely and comprehensible way and that they accept “no” as an answer. Procedures need to be tailored to different contexts – there are no universally accepted answers that can be applied to every community, even if there can be minimal standards defined:

- How to ensure the process is informed by the best scientific understandings
- How to determine who consents for whom
- How to ensure full and timely disclosure of information
- How to ensure that “adequate” understanding is achieved
- How to ensure that consent or rejection is truly voluntary
- How to determine how and when consent is expressed
- How to operationalize consent in a context of nested hierarchies and inter-connected communities
- How to build trust that promises will be kept
- How to ensure that communities and community members that lack resources and are in some ways marginalized have meaningful access to the process and opportunities to participate

It is a serious mistake to assume that consent is a singular decision. Classical ethical and legal doctrines require that people and institutions expressing consent must be informed fully of the risks, uncertainties, and benefits; understand them, and agree to them.

This implies that interested and affected parties must: have a say in determining what information is needed to address the issues and concerns they have (not only the concerns managers or scientists think are relevant); be provided information in comprehensible form that is needed for effective decision making, including assessments of risks, benefits, and uncertainties; and can access that information and learning/dialogue opportunities in a timely and easy manner. Attention must be given to ensuring that all community members interested and affected by a potential decision are able to access information and understand it. The DOE should work with a broad range of groups in interested communities that represent diverse community members to identify information needs and modes of participation. The answers may vary across communities.

Informed consent must be explicitly granted by all the relevant multiple layers of government and more generally by the potential host community. Consent must be acquired periodically over a multiple year timeline agreed to with each host community. Think of acquiring consent as a step-wise process, which can involve back tracking as well as steadily marching forward. For instance (and this is meant purely as an illustration), consent might first be sought for procedural guidelines, principles, and standards of the consent-based siting process. The second step where consent is issued might take place after initial site suitability has been established. Additional steps might occur while site investigations are ongoing. Certainly, there needs to be a final opportunity to issue or withhold consent before the project is guaranteed to move forward. Other countries with promising nuclear waste management processes, such as Canada and the United Kingdom, use a multi-step approach to achieving informed consent of potential host communities. Informed consent must be granted by the community at multiple points – especially after

site suitability and before site selection and consent agreement signed. This has been an important feature of the process in Canada. Of course, to be considered for siting at all, municipalities should have to volunteer for consideration. Volunteer partnerships allows potential host communities to take the first step in determining the outcome, actively submitting their site for consideration rather than being selected by a process out of their control. Potential host communities further maintain this self-determination capacity through much of the remainder of the review of their site given the “right to withdraw” their site from consideration without penalty any time prior to the signing of agreements that begins construction. A minefield of tricky questions remain unanswered, such as: who expresses consent for whom; how is consent determined; is there a difference between failing to give consent and rejecting the facility; what is the legal status of the different forms consent or rejection might take; how should consent among nested levels of governance be handled; should tribes be able to consent without approval of states; what role should adjacent communities have in the process; should there be a strict timetable; what must a community do to receive funding to hire independent experts; what kind of oversight responsibilities can a host community reasonably retain as the facility is licensed, built, and operated?

Local government officials should not determine consent alone. First, officials at local levels of governance are not elected with a mandate to make these kinds of single-issue decisions, which have far-reaching consequences for a community’s identity and cohesiveness. Neither are county, state, or Tribal officials. Second, local officials can become *unelected*, thus putting in jeopardy any agreement with the Nuclear Waste Administration. Third, a focus on local officials can lead to less transparent decision making and more strength to local power brokers. A more broad, robust form of informed consent is required, and works against backroom deals. One mechanism for obtaining a clearer and broader expression of community consent is via referenda. However, some communities may prefer other ways, such as Town Meetings, a series of local workshops and discussion groups, etc. DOE should develop recommendations for communities to consider. For example, it may make sense to recommend that elected officials make the formal determination of consent, but only after extensive community engagement, dialogue, consideration, and one or (preferably) several expressions of collective public opinion in the community.

Area 1, Q6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

We focus here on an entity that is often neglected in planning for nuclear waste management: a social science expert advisory committee.

As part of any consent-based siting process, a social scientific advisory committee for consent and stakeholder and public engagement should be established, funded, peopled, and maintained throughout the existence of the siting effort. Such a committee should include social scientists with expertise in risk communication and public participation and ethicists who are experts on consent, equity, and environmental justice. This will help ensure a) stakeholder and public participation is implemented using the best available theory and practice and b) send a strong signal that a new approach to waste management places informed consent at the forefront. The advisory committee should be explicitly empowered to consider and address issues of equity in the nuclear waste management program.

In addition, the DOE program responsible for implementing a consent-based process should systematically gather data and evaluate performance of all stakeholder engagement and risk communication activities to facilitate learning. Evaluations should meet scientific standards and peer-review publication standards to ensure their quality and legitimacy. Toward these ends, the program office should publish reports documenting stakeholder concerns and how they are being addressed to demonstrate to the public, governmental authorities, and other stakeholders that the process is being conducted in a fair and competent manner and deserving of support. Reports should also be published about *how* the program is responding to challenges – both successfully and unsuccessfully to facilitate learning and demonstrate commitment to a fair, competent, and transparent process. The program office should participate in international forums, task forces, conferences and so on to promote inter-national learning about consent-based siting.

While scholarly research on the social dimensions of nuclear waste management is relatively small, there is a well-developed science of stakeholder engagement and risk communication (Morgan et al. 2001, Renn 1992, FDA 2011). This includes reports from the US National Research Council, which has strongly recommended public and stakeholder engagement as critical to successful decision making (NRC 1989, NRC 2008, NRC 1996, NRC 2009). The best available science should be brought to bear in a SNF and HLW management program. When done well, stakeholder engagement can improve decisions, improve legitimacy of decisions, and improve capacities of participants to be involved in decisions. When done well, risk communication can inform decisions and lead to better decisions. The science of public and stakeholder engagement has demonstrated important lessons and produced effective ground rules. However, simply following general rules is not sufficient. What is understood to be the best practice in a particular situation will depend on what those organizing and participating in the process think about the context, the objectives, their roles, the scientific understanding of the issues, and many other factors. General guidance can only take a planner so far. The stakes are high, however. Conflicts about process can lead to or exacerbate conflicts about outcomes. As the National Research Council argues, “One of the most important goals of process design is to devise procedures that are acceptable to the interested and affected parties. Obtaining agreement on a decision process can significantly affect acceptability of the outcome” (1996, pg. 122).

Consequently, public and stakeholder engagement, risk communication, and decision making under uncertainty require a firm grounding in science as well as learning and adaptive steering, which can be achieved through systematic evaluation.

Within federal agencies there are good examples of how these can be accomplished:

- During the 1990s and early 2000’s the Department of Energy Environmental Management Program funded work to systematically evaluate the performance of site-specific advisory boards (Bradbury et al. 2003).
- The Food and Drug Administration created a Risk Communication Advisory Committee in 2007, which has helped ensure that communication strategies are consistent with the most current knowledge and best practices and that experience is systematically evaluated to improve learning over time (FDA 2009, FDA 2011).
- The EPA Community Involvement and Outreach Branch conducts research and develops resources to support stakeholder engagement in Superfund Program activities.

- The US Army Chemical Weapons Demilitarization Program dialogue effort to identify alternatives to incineration to destroy the US chemical weapons stockpile (See NRC 2015 Chapter 3 and Appendix A for information about the ACWA Dialogue Process.)

In summary, the science of public and stakeholder engagement and risk communication is needed to support successful programmatic activities of the Nuclear Waste Administration in two ways:

1. Research and experience-based input from a wide variety of programs on public perceptions, public acceptability, decision making under uncertainty, mechanisms of public and stakeholder involvement and negotiation.
2. Frameworks and advice to help decision makers make sense out of experience using systematic and high-quality data so that they are better able to anticipate, recognize, and address challenges.

Final comment

Implicit to consent is the principle of self-determination: a community should decide for itself whether to accept the risks and benefits associated with new infrastructure. Such a process will incur costs and take time. The community will need to undergo a learning process that involves a thorough characterization of its existing risks and projected risks, and thoughtful contemplation about how to compare fundamentally different types of risk. Project proponents will need to support mutual learning, listening, and respond to community concerns.

Consent-based siting is not a recipe to site a proposed facility for storing nuclear waste. And it could be abused with the label employed as surface dressing. Some critics argue that consent-based siting in indigenous communities is another empty promise that has allowed international corporations or banks to move forward with projects after securing some mediocre form of co-called community “consent.” In the nuclear waste context, past efforts promoted as consent-based have met with widespread criticism as well.

At the same time, we believe, more generally, that siting processes that properly acquire consent may reduce conflict and lead to better decisions because they find novel ways to mitigate risks, enlarge benefits, and remedy past distributional injustices. Counter-intuitively, a consent-based siting process may also reduce the time required to site projects because legal battles are avoided. As the challenges we have highlighted indicate, implementing such a process is by no means easy. The promise of a consent-based approach requires proper scoping, which the current effort is missing with the focus on interim storage in the absence of any parallel effort to design a process for permanent disposal in deep geologic repositories.

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NUCLEAR WASTE

Nuclear Waste: Knowledge Waste?

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A stalled nuclear waste program, and possible increase in wastes, beg for social science input into acceptable solutions.

Nuclear power is re-emerging as a major part of the energy portfolios of a wide variety of nations. With over 50 reactors being built around the world today and over 100 more planned to come online in the next decade, many observers are proclaiming a “nuclear renaissance” (1). The success of a nuclear revival is dependent upon addressing a well-known set of challenges, for example, plant safety (even in the light of improved reactor designs), costs and liabilities, terrorism at plants and in transport, weapons proliferation, and the successful siting of the plants themselves (2, 3).

Particularly challenging is the disposal of high-level nuclear wastes (HLW). More than a quarter-million tons of commercial HLW is in need of disposal worldwide (1). Wastes accumulate at all stages of the fuel and weapons development cycle: mining, enrichment, fabrication, and reactor operation. The most dangerous of these wastes accumulate at the “back end” of the fuel cycle, particularly in the form of spent fuel, which, despite reprocessing technologies, may remain highly radioactive for a million years (4). Although disposal of HLW remains one of the most challenging scientific and social problems facing all nuclear nations, recent events in the United States, home of 60,000 tons of HLW, make this a particularly important time to highlight often-overlooked social science expertise needed to develop strategies for publicly acceptable solutions to the problem.

More Waste for a Stalled Waste Program

There is disagreement about short-term and mid-term approaches for disposing of HLW, which include hardened on-site or regional

storage, but the global scientific and policy consensus for long-term disposal is through deep geological sequestration (5). In the United States, where a successful waste-disposal program has eluded 10 presidential administrations, the 1982 Nuclear Waste Policy Act, amended by Congress in 1987, designated a single deep geologic repository at Yucca Mountain, Nevada. Authorized to store 77,000 metric tons of spent fuel, this site was projected to begin accepting wastes by 31 January 1998. However, surprises arising from technical analyses of the site, such as the discovery that water flows more rapidly at the site than expected (6), increasing the chances of human exposure (7), led to this deadline being missed. Strong, persistent opposition among Nevada residents and others also contributed to delays, with the site not yet having accepted any waste (8, 9). The Obama Administration withdrew funding for Yucca Mountain in its 2010 budget and directed the Department of Energy (DOE), the federal agency responsible for building a repository, to withdraw its licensing application to the Nuclear Regulatory Commission (NRC). These actions are currently the subject of multiple lawsuits and NRC review (10). If successfully upheld, they will effectively stop the Yucca Mountain project, despite its being the only congressionally authorized site for a repository.

The problem could worsen. The nuclear industry has taken advantage of a new one-step licensing process for commercial nuclear plants, submitting 22 applications to the NRC for 33 new reactors (1, 11). Each new reactor could generate about 25 metric tons of HLW per year (1). President Obama confirmed the Administration’s nuclear commitment by pledging \$8.3 billion in federal loan guarantees for two new nuclear plants in Georgia (12) and by seeking to increase the total amount to \$54.5 billion by next year (13).

Facing a stalled national waste program on one hand, and a possible increase in the volume of wastes on the other, the president directed the secretary of energy to appoint a Blue Ribbon Commission on America’s Nuclear Future, which “should include recognized representatives and experts from a range of disciplines and with a wide range of perspectives” (14). The 15-member commis-

sion formed in January 2010 is charged with conducting “a comprehensive review of policies for managing the back end of the nuclear fuel cycle,” including civilian and defense used nuclear fuel and nuclear waste (14). The White House further recognized that “Such a solution must be based upon sound science and capable of securing broad support, including support from those who live in areas that might be affected by the solution” (15).

Physical Constraints, Social Acceptability

Unfortunately, the scientists and officials seeking to craft an acceptable waste-management strategy are starting from the weak position created by the legacy of past actions. For example, the mishandling of wastes from military weapons facilities (16, 17) generated considerable controversy and loss of social trust and confidence in the integrity of the siting and facility development program. Trust is a key factor in risk perceptions (9, 18). The DOE is especially mistrusted (19) and has been unable to address this mistrust (20).

The key issue here is not only to get the science right but also to get the “right” science (21). Getting the right science means answering the right questions. Given the history of nuclear waste management, in the United States and elsewhere, those questions must focus on the conditions for social and political acceptability, within the constraints identified by physical science and engineering. Some communities will be asked to host the processing, storage, and disposal of used nuclear fuel and HLW. Others will be asked to allow the transport of these materials. All Americans will pay for the infrastructure. Although scientific and technical analyses are essential, they will not, and arguably should not, carry the day unless they address, both substantively and procedurally, the issues that concern the public.

Fortunately, there is a sizable social science literature that has systematically investigated the questions of public acceptability, making basic tenets of public concerns quite clear (8, 22). People do not like projects that pose highly uncertain risks, unless they see great compensating benefits and have deep trust in the institutions managing them (8, 9). Many studies have shown that these condi-

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tions for public acceptance are lacking with HLW (8, 9, 18, 23). Citizens have expressed great concern about siting a repository in their vicinity, even while supporting nuclear power in the abstract (8, 18).

Many studies have demonstrated the importance of engaging impacted publics at the beginning of policy planning and projects, to get the right questions to frame analyses, ensure that expectations for inclusive and fair processes are met, and ensure legitimacy of decisions (24–26). A variety of frameworks, such as the staged approach (27), have been developed for “analytic-deliberative” (21) processes to ensure a technically competent and publicly engaged solution. These frameworks emphasize “continuous, adaptive learning in both technical and societal areas,” continuous public engagement, and transparent use of public inputs (27). Case studies show the benefits of public involvement, for example, the cleanup of an Ohio nuclear weapons facility (28) and the siting of a facility in New Mexico for storage of defense-generated transuranic wastes (23).

Moreover, public engagement and transparent deliberations are “communication acts” that build social trust and legitimacy, whatever their content. The social science needed to create such communications is well understood (21, 27, 29, 30) and essential for strategies that rest on the principal of voluntary consent and the public’s right to know (31, 32).

However, despite decades of social science, guidance to promote adaptive learning, social trust, and legitimacy has not been followed in addressing waste and other challenges to nuclear power (26). For example, how state structures of democracy and the role of technical elites in policy formation and implementation may influence whether and how scientific evidence is used. Institutional cultures typically frame challenges as technical problems rather than societal challenges. To the extent that the social side is recognized, it has often been viewed as an obstacle to overcome, not an element of the democratic process; planners and officials can be fearful that public involvement may shift an unengaged or uninformed public toward more controversy or opposition, thus reducing their control. Those institutions may not trust the public to make the “right” decisions. Agency guidance is often very general, leaving planners vulnerable to missteps when dealing with contingencies of specific situations and averse to trying new approaches.

Rebuilding Trust

The Blue Ribbon Commission, the DOE, and other responsible agencies should make

the rebuilding of social trust and credibility central to their operations and their proposed strategies for waste management, then draw on the social sciences needed to fulfill these commitments. This means making the public and the social sciences serving the public a driving priority (33). The science that can inform an adaptive learning process that involves the public in a way that improves decisions and enhances trust and credibility is remarkably inexpensive, compared with the stakes riding on their efforts.

The commission is particularly well positioned to begin the process of overcoming the problematic legacy that it inherited. It has taken steps toward transparency by fulfilling the requirements of the Federal Advisory Committee Act. However, there is little scientific reason to expect such a pro forma approach—where the emphasis is on meeting formal requirements, not the needs of the public—to succeed where its predecessors have failed. Rather, it runs the risk of exacerbating indifference, mistrust, and resistance (24). The alternative is to treat the public in a respectful, evidence-based way throughout the deliberations. Social science can provide effective guidance in the selection of representative publics, in the development of effective deliberation techniques, and in the integration of technical and lay knowledge. The commission, consistent with its charge and charter, should include expertise on its subcommittees to inform recommendations addressing social trust and credibility, perhaps even creating a subcommittee devoted specifically to procedural issues of a proposed waste-management strategy. The strategy adopted by the commission will affect not only how its recommendations are judged but also how the public should be involved in subsequent policy and siting decisions. Addressing relevant social issues does not guarantee success, but ignoring them increases the chances of repeating past failures.

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From: Kathy Tussing
Sent: Monday, January 31, 2022 10:28 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

Dear DOE:

In response to the question, "How should the Dept. of Energy build equity into (consent-based siting)?"
Siting consolidated interim Storage Facilities in communities of populations that are BIPOC (Black, Indigenous, People of Color) or low income, is not equity. Such populations are already disproportionately affected by hazardous facilities. They should not be further impacted by CISFs (Consolidated Interim Storage Facilities).

Thank you for your consideration.

Sincerely,

Katharine Tussing

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

From: Uldis Vanags
Sent: Wednesday, March 2, 2022 11:34 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: Comments from CSG-East Northeast High-Level Radioactive Waste Transportation Task Force.pdf

Please accept the attachment as comments from the CSG-East Northeast High-Level Radioactive Waste Transportation Task Force.

Uldis Vanags
Project Director
[REDACTED]

*Uldis Vanags
Council of State Governments Eastern Regional Conference
Project Director
Northeast High-Level Radioactive Waste Transportation Project*

[REDACTED]
[REDACTED]

[REDACTED]
[REDACTED]
[Website: csgeast.org](http://csgeast.org)

This message does not originate from a known Department of Energy email system.
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EAST

March 2, 2022

To: ConsentBasedSiting@hq.doe.gov

From: Uldis Vanags, Project Director
Council of State Governments – East
Northeast High-Level Radioactive Waste Transportation Task Force

Subject: RFI: Consent-Based Siting and Federal Interim Storage

Please accept the following comments from the members of the Northeast High-Level Radioactive Waste Transportation Task Force.

Best Regards,

Uldis Vanags

CT • DE • MA • MD • ME • NB • NH • NJ • NY • NS • ON • PA • PE • PR • QC • RI • VI • VT

Sen. Sharon Carson, New Hampshire, *Co-Chair*
Sen. Lou D'Allesandro, New Hampshire, *Co-Chair*

Hon. Ted Arnott, Speaker, Ontario, *Vice Chair*

David N. Biette, *Director*

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Comments on DOE's Draft Consent-Based Siting Process

General Comments

1. The following information should be included in the Draft Consent-Based Siting Process:
 - a. Proposed land area and approximate size of the storage or disposal facility.
 - b. A flow chart for the license application review process and decision.
 - c. Discussion of potential risks as well as potential benefits and guarantees for the local community.
 - d. Designation of nearby communities for the purpose of sharing benefits and guarantees of the project.
 - e. Formation of a local advisory committee, with recommendations for funding and composition of this committee.
 - f. Transportation considerations.
 - g. Lessons learned from other siting decisions.
 - h. A glossary of terms
2. DOE's use of the term "community" is interpreted as the broad and inclusive participation from all groups and not limited to the local community. It is important to emphasize in the early stage of the process implementation that only tribes, states, and local governments have the legal authority to make decisions and commitments on behalf of the communities regarding benefits and guarantees.
3. The draft consent siting process should point out that there will NOT be any relaxation of the general design principles and site assessment considerations at any step of the process because a particular community has expressed interest in hosting the facility. The Department should develop a "siting plan" that includes a set of technical siting criteria

that each potentially suitable site must meet for a storage or disposal facility. The siting plan must include a ranking method for evaluating and prioritizing the factors that are important to consider when selecting a site within the interested community (e.g., transportation considerations, weather).

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

Many governmental bodies have programs that address social equity and environmental justice. The DOE will need to integrate the programs of the applicable governmental entities (State, Tribal and Local) into the consent-based process. This will likely require the DOE to establish a group within its consent-based program whose mission is to integrate the programs and interface on a continuing basis with any groups within a governing body who are responsible for that body's social equity and environmental justice programs.

2. What role should tribal, state, and local governments and officials play in determining for a community to host a federal interim storage facility?

Without formal agreements from all governmental entities that are affected, there can be no sustained consent. The DOE must collaborate with all governmental entities to ascertain which have the authority to approve any consent-based decision and those entities must be involved in the approval process from the very beginning. For the sake of transparency and communication, the DOE must also involve those governmental entities that do not have consent authority. States

differ in which entities have approval power over actions, agreements, etc. concerning actions within their boundaries.

The relationships and dynamics between the State, Tribal and Local governments can differ from one State to another. State, Tribal and Local governments and officials have the legal authority to make decisions and commitments regarding benefits and guarantees. States and local governments have the authority to issue certain permits that are required during facility construction and operations. Additionally, the host state and the local government are expected to establish an independent inspection and oversight program at the facility on behalf of the host community.

The DOE must include all three entities in meetings from the start of the consent-based process. By doing this, all three entities can discuss their individual issues openly and hear how those issues may affect those of the others. This could allow a more efficient resolution of issues instead of the DOE approaching each entity, one-at-a-time.

The DOE must collaborate with the appropriate governmental entities to produce acceptable consent agreements that will continue to be valid after political changes in Tribal, State and Local governments have occurred. Without the ability to have binding agreements, time and money will be wasted as what one governing administration agrees to, the next administration can invalidate. This is the Achilles Heel of consent-based siting.

3. What benefits or opportunities could encourage local, state, and tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

It is expected that the host community or communities will receive significant economic benefits and guarantees that can be used to improve the well-being of the residents. Benefits should relate to “general community interests.” Some of the recommended benefits for the host community are as follows:

- i. Reimbursement of costs associated with the review and evaluation of documents that DOE submits in support of the licensing of the proposed facility and to examine the DOE’s license application.
- ii. Direct payment to the host community or communities and additional payments based on the amount of waste received at the facility.
- iii. Commitment to hire residents to work at the facility.
- iv. Funding to provide annual radiological emergency medical response training for local hospital staff.
- v. Funding for the host community’s emergency management planning and first responders’ radiological emergency response training.
- vi. Payment of school district and municipal property taxes for the residents who live in the vicinity of the facility (within a radius to be determined).
- vii. Funding to hire a local inspector(s) to monitor the facility and its operations.
- viii. Funding for establishment and operation of a local advisory panel.

- ix. Funding to educate the public by hosting several meetings to discuss the benefits of an interim storage facility.
- x. Funding for improvements in infrastructure that could result from a new facility (e.g., road upgrades).
- xi. Funding for the host community's nuclear education program to attract younger generations towards nuclear industry and nuclear jobs.

The DOE must present itself as a continuing partner with the State, Tribal and Local governments and dispel any thoughts that once the facility is built that it might not continue to be involved with the governments as time passes and situations change. **DOE continuing communication is a necessity**

4. What are the barriers or impediments to successful siting of federal interim storage facilities using a consent-based process, and how could they be addressed?

First and most important, the DOE must define what it means by "consent". It is not clear in the "consent-based" documents, what the DOE considers as successful "consent". Without a clear "consent" definition, the public will be apprehensive in participating in a "consent agreement".

As stated previously, change of administration within all levels of government is the Achilles Heel of consent-based siting. Any consent-based siting process must have a definite plan to avoid the pitfalls of administration change.

Virtually any development project presents potential risks and disadvantages, as well as benefits. Whether it is siting a landfill or a radioactive waste storage or disposal facility, public distrust can erupt into hostility. Siting a radioactive waste storage or disposal facility will be controversial. Even with a consent-based siting

process, not everyone in an interested community will welcome the final decision. The issues that are of concern to the potential host community generally include health and safety issues, long-term management of the facility, potential negative impacts on the community due to the controversial nature of the facility, and political controversy. In order to address these potential impediments during the siting process, the DOE should:

- i. Educate the community leaders and members by providing timely and adequate information.
- ii. Include all segments of the community in discussions.
- iii. Keep discussions and decisions open and visible.
- iv. Hold small and informal meetings or open houses for greater participation.
- v. Encourage and facilitate discussions among residents with differing viewpoints.
- vi. Develop partnership with and earn the trust of the community.
- vii. Emphasize that safety is more important than economic benefits.
- viii. Include licensing process, community involvement and lessons learned from the two private interim storage facility.

Although consent-based siting is directed towards the building of a facility at a specific locale, the transportation of spent nuclear fuel (SNF) to the site cannot be ignored in the public's eye. In our opinion, much of the public is unaware that SNF has been shipped safely in the past and that Naval SNF is shipped periodically in this country. The DOE must educate the public about the safety record of those SNF shipments, the "Atoms for Peace" foreign SNF shipments in

this country, the WIPP shipments, etc. This education needs to be written as well as oral and needs to be done in an easy to understand and interesting method (i.e., remember who your audience is).

See Area 2 Question 5 for additional applicable information.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

The Department, in collaboration with communities and governmental entities, should develop a set of guiding principles, called the “Consent-Based Siting Principles” that define how the Department will work with potentially interested communities. The guiding principles should focus on **safety** (DOE will build the facility only if it is safe), **choice** (the volunteer community decides whether or not to host the process), **partnership** (DOE will work as a partner with the community) and **transparency** (DOE should develop transparency and open two-way communication with the public which is key to success). Because an interim waste storage facility will be operating for many years, the community leaders and residents will want to know the answers to questions such as:

- i. What are the risks to the workers and public during normal operations?
- ii. What measures will be in place to prevent an accidental release and to remedy the consequences of an accident?
- iii. What is the track record of existing facilities?
- iv. What is the possibility of license extension beyond the initial period of facility operation?

- v. Who will be responsible for facility closure and decommissioning?
- vi. Would the host community be liable in case there are health and safety problems?
- vii. Will there be a final repository? If not, will the spent nuclear fuel be stored at the local site indeterminately?

The Department should make a commitment to provide the host community with funds to establish an independent environmental monitoring and inspection program at the facility throughout its operations. The Department should also commit to keeping the host community fully informed about facility operations and to address community ideas and concerns on an on-going basis.

6. What organizations or communities should the Department consider partnering with to develop a consent-based siting process?

The Department should partner with local governmental and non-governmental organizations and agencies for the purpose of providing “objective and unbiased” information to help the potential host communities in discussing their issues and concerns. Some of these organizations include local colleges and universities, local chapter of the Health Physics Society, local chapter of the American Nuclear Society, local hospital association, local league of women voters, and local state agencies (environmental protection, health, transportation and emergency management). Other than the local organizations, the Nuclear Energy Institute (NEI), the National Science Foundation, the International Atomic Energy Agency, and the international consent-based facilities (e.g., Finland) could provide information on a broad range of issues to the public.

The DOE should continue to support the NTSF and the TRMTC and State Regional Groups (SRGs). These groups have a vested interest in the siting of interim storage facilities and a final repository.

The NRC and DOT should be partners with the DOE in a consent-based approach. The NRC actively interfaces with the Tribal communities and should have many lessons-learned that could apply to consent-based siting. The DOT will be involved in the transportation of the SNF and therefore should have some insight as to how that transportation could affect the surrounding communities where a consent-based facility is being proposed.

It would be a mistake to approach just the “siting” aspect of a facility and not address how the transportation through surrounding communities would be affected.

Communities across the nation have established nuclear advisory panel groups which review and discuss local nuclear power station issues that could affect the local community. The DOE should engage with these advisory panel groups as they have dealt with various governmental agencies, private industry and local community members and therefore can measure the “pulse” of the community.

Private developers of interim sites should be consulted. These are organizations that have or may be successful in licensing and building an interim site. Although their sites were not “consent-based”, they should have lessons-learned that could be applied to dealing with local communities during their siting processes.

Although not all the lessons will apply, there may still be benefit in partnering with these organizations.

7. What other issues, including those raised in the Draft Consent-Based Siting Process, should the Department consider in implementing a consent-based siting process?

Below is the list of topics or issues that the Department should communicate with the interested community during the early phase of the process.

- i. A set of guiding principles (safety, choice, partnership and transparency) called the consent-based siting principles, that define how DOE will work with the potential interested communities (as described in response to Question #5 above).
- ii. Discussion of potential risks and benefits associated with hosting the storage or disposal facilities.
- iii. Designation of nearby communities for the purpose of sharing benefits and guarantees of the project.
- iv. Formation of a local advisory committee.
- v. Transportation considerations.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process, and how could those barriers be mitigated or removed?

It can be anticipated that community citizens will want to know how long SNF, etc. will be stored in their community due to the events over the last several decades (e.g., stranded spent nuclear fuel at shutdown/operating nuclear reactors; partial completion and then shutdown of Yucca Mountain; nuclear utilities suing

due to breach of the Standard Contract; etc.). These types of events will bear on a community's "consent" and must be addressed early in the process.

Defining "consent"; determining the governmental body(s) with "consent" approval; clearly communicating on a timely basis with the community citizens and governmental authorities; providing "boots on the ground" support for the community in helping it to make a decision; streamlining the bureaucratic process for siting; addressing the community as a whole instead by its individual parts; etc. are actions that could help to remove the public's hesitance to enter into a consent-based agreement.

Although easier said than done, removing the consent-based process from the political arena could make consent-based siting feasible and successful. As it presently stands, with the change of an administration, the new political party in power can stop all the accomplishments that were achieved in the past administration.

See Area 1 Question 4 for additional applicable information.

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

Communication is the key to success. DOE should be prepared to have the necessary personnel available for public meetings in the community. The DOE contingent should consist of individuals who can address the physical building of the storage site; the risk factors considered in selecting a site; the radiation aspects of the site; transportation of SNF to the site; etc. The DOE personnel should

remain as constant as possible such that the community members become familiar with them and gain confidence in what the DOE is saying. Additionally, the DOE should create a dedicated website (or at least a portion of the DOE website) that contains siting information, schedules, FAQs, etc. so that the public has a central database of information concerning the siting in its community. The website would also serve as an information repository library for the community members.

See Area 1 Questions 4 and 6 for additional applicable information.

3. How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

The Department and the potentially interested community must adopt the “partnering attitude” and learn the skills necessary to make partnering work during the siting process. Partnering would help the parties work as members of the same team to achieve common goals while minimizing wasted time and money. The partnering concept includes:

- i. Open communication and exchange of information.
- ii. Complete access to information.
- iii. Working level staff permitted to resolve most issues.
- iv. Decisions reached by consensus or by a process agreed upon in advance.
- v. All parties taking responsibility for cultivating the partnering relationship.
- vi. Establish community coordination group dedicated to meet and work with community organizations in educating the community citizens and officials.

- vii. Conduct regular public meetings to educate the public about nuclear safety and nuclear emergency preparedness.
- viii. Develop a central database system for public to learn about nuclear safety, interim storage design, transportation requirements, NRC regulatory requirements and lessons learned from other states and countries. Videos are always beneficial for the public.

The Department should offer to provide funds for training the parties involved in skills and processes for partnering, including the use of third-party facilitators to assist with the process.

4. How might the Department more effectively engage with local, State, and tribal governments on consent-based siting of federal interim storage facilities?

DOE could setup a liaison program such that the Local, State and Tribal governments have one point of contact with the DOE for each proposed consent-based site. This may require more than one person in the liaison group since other sites in other locales could be simultaneously going thru the process. It is important that the liaison(s) not be replaced unless absolutely necessary.

The process of engaging each form of government should be clear and concise and formalized in writing so that all parties are playing by the same rules. All three forms of government should have equal standing in the process.

The DOE should hold several public meetings in several States and open them to other States to participate in the discussion. In such meetings, the DOE could provide examples of the type of site and community that it feels would constitute a typical interim storage site based on the DOE's experience, its environmental

studies, etc. The communities need to know what should be considered prior to taking the steps to advance the consent-based siting in their locales.

See Area 1 Questions 4 and 5, and Area 2 Question 3 for additional applicable information.

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

There are potential risks and benefits for the community associated with siting a controversial facility. The issues that would be of interest to the potential host community are as follows:

- i. **Health and Safety:** Potential impact on public health and safety, and the environment during normal operations and accident conditions.
- ii. **Long-Term Management:** Possibility of license extension beyond the original facility license period, facility closure and long-term care as needed.
- iii. **Economic Benefits:** Direct payments and other benefits such as hiring of local residents.
- iv. **Potential Risks to the Community:** Liability if there are health and safety problems, involvement of outside activists to disrupt and polarize the community.
- v. **Political Controversy:** Political risks for elected officials who express interest in the facility, possibility that controversy over the project would divide the community.

- vi. **DOE Organization for this process:** Explain the consent-based process and the associated players within the DOE and other federal agencies involved.

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

Many governmental bodies have programs that address social equity and environmental justice. The DOE will need to integrate the programs of the applicable governmental entities (State, Tribal and Local) into the consent-based process. This will likely require the DOE to establish a group within its consent-based program whose mission is to integrate the programs and interface on a continuing basis with any groups within a governing body who are responsible for that body's social equity and environmental justice programs.

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technology?

There are several possible combinations in this scenario, and each has its own advantages and disadvantages. One possibility is to co-locate the consolidated interim storage facility with the pilot interim storage facility and/or with the geological repository. Although there are several advantages of co-locating the two facilities (e.g., significant reduction in transportation cost, sharing a labor

pool, onsite sharing of knowledge, ease of access to other facilities' personnel and equipment, cost reduction, shared facilities for operation, job growth, economic benefit to the local community) however, it would be unlikely for a community to consent to hosting multiple controversial facilities and to manage all of the nation's waste. Other disadvantages are time delays in licensing and siting various types of facilities in one place, public perception of the detrimental effect of one facility on the other if an undesirable event occurs, additional impediments (e.g., traffic) to emergency preparedness.

On the other hand, it is probably more likely to find a potentially interested community or municipality near an existing nuclear industry facility with an excellent record of safe operation.

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

The answer to this question is "until such time that a permanent repository is completed and ready for operation" as the two are directly tied to each other. Therefore, the DOE should proceed with the development of a repository in parallel with the development of an interim storage facility. However, the DOE may discover that it is more challenging to find a potentially interested community to host a permanent repository versus an interim storage facility. Therefore, it might be unrealistic to expect that the development of an interim storage facility would correspond to the progress on establishing a permanent repository.

At some point, it may not be advisable to build a new interim site or possibly complete one being built because a permanent repository has been approved and is or will soon be constructed. The difficulty in making the decision is at what point to stop the consent-based program for interim sites as there is never a guarantee that the “approved” permanent repository will get built. The building of the permanent repository once approved is dependent on the political environment that follows the approval decision.

4. What other issues should the Department consider in developing a waste management system?

The Department should prepare two sets of documents in support of the proposed Consent-Based Siting Process: a “Siting Plan” and a “Volunteer Plan”. The purpose of the Siting Plan is to provide specific technical procedures to identify a suitable site for the storage or disposal facility through a set of disqualifying features. The Volunteer Plan (or the Community Partnering Plan) should outline a process that empowers the interested communities to evaluate the advantages and disadvantages of hosting the facility. It should serve as a guide for the community members to use in considering the facility.

The Department should work with Congress to revisit the possibility of “reprocessing” spent nuclear fuel as has been done previously in this country and is presently being done in other countries (e.g., France). The DOE should take into consideration lessons learned from previous reprocessing in the United States (e.g., West Valley in New York) and those from reprocessing efforts in other countries.

From: David G. Victor

Sent: Thursday, March 3, 2022 8:53 PM

To: Consent Based Siting

CC: Dan Stetson ([REDACTED]); Martha McNicholas; Manuel Camargo; Lorraine Sandstrom

Subject: [EXTERNAL] Response to the Consent Based Siting RFI, leadership of the SONGS Community Engagement Panel

Attachments: CEP Leadership Response to RFI, 3 March 2022.pdf; Attachments_CEP response to DOE RFI 4 March 2022.pdf

Dear DOE Consent team

Attached please find our responses to your RFI, along with an appendix.

Thank you for the opportunity to comment and for all the work that you do for our country.

With all best wishes,

David Victor, SONGS CEP Chair

Dan Stetson, SONGS CEP Vice-Chair

Martha McNicholas, SONGS CEP Secretary

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

Date: 3 February 2022

To: consentbasedsiting@hq.doe.gov

From: David G. Victor, Dan Stetson, Martha McNicholas

Subject: RFI – Consent-Based Siting and Federal Interim Storage

INTRODUCTION AND CONTACT INFORMATION

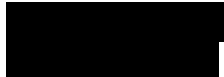
The volunteer leadership of the San Onofre Nuclear Generating Station (SONGS) Community Engagement Panel (CEP) respectfully submits this response to the Department of Energy (DOE) Request for Information (RFI) on using a consent-based siting process to identify federal consolidated interim storage (CIS) facilities for commercial spent nuclear fuel (SNF).

In general, all CEP members desire responsible approaches to the prompt removal of spent fuel from SONGS. The CEP is not a decision-making body but rather serves as a conduit of information among the communities surrounding SONGS and the retired plant's co-owners including Southern California Edison (SCE). This response sets forth perspectives on spent fuel disposition from the CEP leadership—Chair David Victor, Vice Chair Dan Stetson, and Secretary Martha McNicholas—and is informed by the diverse views of CEP members on the matter.

Organization: SONGS Community Engagement Panel

Contact name: Dr. David G. Victor, CEP Chair
Professor of Innovation and Public Policy, School of Global Policy and Strategy
Professor of Climate Science and Policy, Scripps Institution of Oceanography
University of California San Diego

Address:



Phone number:



E-mail address:



BACKGROUND

The CEP was created in tandem with the retirement of the San Onofre Nuclear Generating Station (SONGS) to provide a two-way conduit of information between the operator of the plant (SCE and the other SONGS co-owners) and the communities affected by the closure. Its 18 volunteer members span local governments, tribal nations, environmental groups, organized labor, business, local schools, academia, emergency responders, Marine Corps Base Camp Pendleton, and the neighboring state park. Importantly, more than half of the CEP members are local elected officials who represent neighboring cities and counties along the Southern California coastline. As elected officials they address, on a regular basis, the issues at stake in the DOE RFI—in particular, matters of consent and informed local choice.

SONGS was permanently retired in 2013 and the CEP was formed in early 2014. The group has convened quarterly public meetings consistently over time, addressing various matters of interest to local communities. Two topics have emerged as keen areas of interest and account for most of the work of the CEP: the safe onsite storage of spent fuel and the prompt relocation of SONGS spent fuel to a licensed offsite facility. On the matter of relocation of SONGS spent fuel the CEP has conducted surveys of its members¹, held extensive public discussions² about a responsible strategy for relocating the spent fuel, articulated what we have learned in a series of strategy documents³, testified at Congressional hearings⁴ and before the DOE⁵, and engaged the relevant state⁶ and local officials⁷.

The federal spent fuel management program was the focus of a 10 February 2022 virtual meeting of the CEP, at which the guest speaker was DOE's Dr. Kimberly Petry, Acting Deputy Assistant Secretary for Spent Fuel and Waste Disposition. The CEP previously convened meetings with expert contributors to the Blue Ribbon Commission Report as well as advisors who supported development of SCE's Strategic Plan for the Relocation of SONGS Spent Nuclear Fuel to an Offsite Storage Facility or a Repository. We have had extensive discussions with the communities that might host consolidated interim storage—including hosting a public meeting at which one of those communities presented its plans for local interim storage in New Mexico—and received updates on a possible permanent repository and also alternative technologies (e.g., deep borehole).

RESPONSE

The CEP leadership is highly encouraged by the DOE's work to restart the federal spent fuel management program, starting with a consent-based approach to siting federal consolidated interim storage facilities for spent fuel from SONGS and other nuclear sites. Following are responses to at least some questions in the three topical areas set forth in the RFI.

1. **Area 1: Consent-Based Siting Process** (*responsive to questions 1, 2, and 3*)

The CEP leadership strongly supports using best practices as it relates to spent fuel disposition, and that starts with what we view as the international best practice of using consent for siting spent fuel facilities. Other countries including Finland, Sweden, and Canada have demonstrated true progress using a consent-based approach; the United States (US) would be well-served to follow a similar process, albeit tailored to our unique socio-political environment. The CEP has discussed, repeatedly, the need to find a solution for spent fuel to alleviate the \$2 million cost per day for onsite storage, reduce the perceived risk to current host communities, and allow for communities that want to host spent fuel gain the benefits that come from that investment and local activity. We are encouraged to see the DOE doing just that—adopting a consent-based process from the outset. Equally important is the DOE's attention to social equity and environmental justice. DOE should pay

¹ Reference attachment A: Survey of CEP on spent fuel 21 July 2015

² Reference attachment B: Letter to CEP on spent fuel update 25 Aug 2015

³ Reference attachment C: CIS advocacy strategy 3 Oct 2016

⁴ Reference attachment D: Victor testimony House Oversight 26 Sept 2017 and attachment E: Stetson testimony Congressional field hearing with appendix 7 June 2019

⁵ Reference attachment F: Stetson testimony DOE consent-based siting 26 April 2016

⁶ Reference attachment G: Letter from CEP to CEC 12 Dec 2016

⁷ Reference attachment H: Victor letter to San Diego Board of Supervisors 11 Sept 2015

particular attention to the communication needs of a broad range of interested communities, tribal nations, and states.

The CEP leadership believes that long-term success must begin with building trust among the DOE and potential host communities for interim storage facilities. It is important for the DOE to demonstrate that it is acting in the best interests of such potential host communities, rather than imposing the spent fuel on an unwilling or disadvantaged community. We recommend that the DOE staff work toward forging a true partnership with interested communities.

DOE staff will do well to actively solicit input from potentially interested communities and work to create an environment in which it is easy for communities to step forward, express some level of interest, and get engaged in the process. DOE should seek input from the full range of stakeholders, including those who have and will bear the costs to site, design, construct, and operate federal consolidated interim storage facilities.

Vitally important to consent is allowing interested communities to define consent, not a third party. Such communities should play the central role in deciding how interest and consent are measured and how to weight a variety of voices. What matters to one community may be very different to another community. Benefits and opportunities for interested communities should be driven by those communities, with the DOE exercising flexibility to consider a wide range of options. DOE should invite local communities to articulate what “consent” means to them. Obviously we must be attentive to the processes by which consent is obtained, but the first word in that process should come from communities themselves—and they should not just declare that consent has been obtained but also the processes by which that was obtained.

The general approach should be one-size-fits-one, not one-size-fits-all.

Public participation should be meaningful and allowed to evolve over time, while also recognizing that universal consent may be impractical. Of key importance should be those stakeholders most closely associated with potential sites. Initial steps should focus on learning more about what it means to serve as a host for this type of facility, not a binary “yes” or “no” commitment at this early stage. Through the process, should potentially interested communities decide to opt out of consideration—for whatever reason—that ought to be viewed as a reasonable outcome that permits the DOE to focus its ongoing efforts with other communities that remain interested in learning more about the prospects of hosting a spent fuel storage facility.

These activities by DOE should be pursued with an eye to their broader impact on the process of making informed consent a reality. DOE is running its publicly funded program that might support one or more local interim storage facilities; in tandem, there are private efforts aimed at the same goal. The more sites arrived at through legitimate processes the better, and the DOE effort should help establish the right norms for other efforts that might have minimal or no DOE engagement.

2. Area 2: Removing Barriers to Meaningful Participation *(responsive to questions 1 and 2)*

The CEP leadership is encouraged to hear that the DOE is contemplating a funding opportunity for interested communities. The ultimate goal should be informed consent.

The pursuit of informed consent logically may require resources that many interested communities, at present, do not possess. Those include regulatory and legal expertise and varied technical expertise. In some cases, communities may be unaware of the opportunities for hosting spent fuel because key documents have not been translated into locally used languages or made available on a platform or in a media that they are familiar with and can access. And where communities are engaged it is of paramount importance to look closely at whether and how the community has engaged voices that are often not well heard or articulated—a mission that overlaps with the objectives of the environmental justice movement. At our meetings, we have heard all of these concerns raised.

3. Area 3: Interim Storage as Part of a Waste Management System *(responsive to questions 3 and 4)*

First, the CEP leadership recognizes that DOE staff must work within the confines of authorizing legislation and Congressional appropriations. And, again, we are encouraged by the DOE's new work on interim storage. At the same time, it is vital to expand the program beyond interim storage to other elements of an integrated spent fuel management program. That requires amendments to existing law—the Nuclear Waste Policy Act (NWPA), as amended in 1987—in order to incorporate international best practices and the reality of the current landscape, some 35 years later.

While the DOE may not be positioned to advocate for changes to the NWPA, there are other third-party entities and coalitions that have the interest and the capacity to collaborate on needed changes to federal law. It is important to determine what needs to be amended and when it is needed. For now, in our view, such amendments should address:

- a. Modifying the linkage between interim storage and permanent disposal, such that construction on an interim facility may start in the near term, long before construction authorization for a permanent geologic repository (as required by the NWPA). This modification is not a license for the nation to be reckless about the need for long term disposal but a reflection of the realities today after decades of failure to advance to conclusion one or more permanent disposal facilities.
- b. Authorizing DOE to begin work—perhaps a similar consent-based siting effort—on a repository other than, or in addition to, Yucca Mountain (the single repository authorized by the NWPA).
- c. Formation of an autonomous federal entity with reliable funding that can enjoy continuity across numerous Administrations and Congresses, which can assume full responsibility for the spent fuel program from the DOE (here again, international best practice tells us that such an autonomous structure provides continuity and thereby bolsters confidence).
- d. Inclusion of local government in ongoing risk assessment and emergency preparedness activities in support of interim storage and permanent disposal facilities.

Another issue the DOE should consider in the context of an integrated spent fuel management program is transportation. The CEP looked at transportation planning issues in some depth around 2015-2016. What we learned is that local planning and the engagement of first responders is essential to a viable transportation program requires years of lead time. The DOE should differentiate processes for seeking consent from communities along transportation routes from a consent-based process for host communities.

Considerable experience exists with respect to the provision of specialized training for state, tribal, and local emergency responders to prepare them to support a potential transportation accident with a spent fuel shipment. Training such trusted emergency responders is not only essential but will add strong credibility to the effort. The CEP membership includes officials with direct responsibility for these kinds of local and regional planning activities. DOE should consider whether there are opportunities to expand training beyond currently employed emergency responders, so as to open doors for new employment opportunities in these communities.

Finally, DOE should pay particular attention to the unique needs of decommissioned or decommissioning sites such as SONGS. We are aware the NWPA required the DOE to begin removing spent fuel from nuclear sites in 1998. However, spent fuel remains stored onsite at nuclear sites across the country and is stranded at retired plants including SONGS. The standard contract that governs fuel removal has flexibility regarding the ordering of fuel shipments, and putting a clearer priority on stranded fuel would help make shipping more efficient and also advance the decommissioning of such plants; the land can't be restored for more productive uses until the spent fuel is removed. The CEP leadership encourages the DOE staff to prioritize stranded spent fuel for removal and hold as a second priority the process of removing spent fuel from sites with operating reactors that continue to produce spent fuel.

Thank you for considering our response.

All best regards,

David Victor, CEP Chair
Dan Stetson, CEP Vice Chair
Martha McNicholas, CEP Secretary

Attachments

Survey of CEP on spent fuel 21 July 2015
Letter to CEP on spent fuel update 25 Aug 2015
CIS advocacy strategy 3 Oct 2016
Victor testimony House Oversight 26 Sept 2017
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SONGS Community Engagement Panel
Response to DOE RFI on Consent-Based Siting and Federal Interim Storage

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To: Members of the SONGS Community Engagement Panel (CEP)

From: David G Victor, Tim Brown and Dan Stetson

Re: Views of the CEP on Consolidated Interim Storage and on the work of the CEP

Date: 21 July 2015

At our last CEP meeting we had a very brief discussion of consolidated interim storage (CIS) based on a 14 April 2015 memo from us that outlined a “California strategy” for promoting the use of CIS. The idea behind that strategy was for the State of California to do the spadework necessary to plan for exporting spent fuel from SONGS and other reactors in the state to future CIS facilities and to articulate the main policy options. CIS, we believe, is the most viable way to get the fuel out of SONGS as expeditiously as possible. We also see quite favorable movements in the federal government and within private industry toward this kind of solution.

Because our discussion at the last meeting was short we have put this topic back on the agenda (along with several other items) at next week’s CEP meeting. Our goal is to have a practical conversation about what should be done next on CIS—what can be done in the local towns and communities, what should be done to create support in Sacramento, and what might be needed at the Federal level? The CEP is not a decision-making body, but we hope that by discussing this topic we can play a constructive role in focusing attention on the needed next steps.

To prepare the ground we have invited each CEP member to talk with us individually about their views. At the same time, we also asked each CEP member for views about how the CEP overall is functioning—a task we performed last summer and promised to do again this summer. This memo summarizes what we learned.

Please let us know if there are parts of this memo with which you

disagree. We circulate it not as a definitive record of the full range of CEP views but just as a way to efficiently focus our minds around a few core ideas since there won't be time to talk about everything.

CEP VIEWS ON CONSOLIDATED INTERIM STORAGE

None of the CEP members were opposed to CIS; all saw CIS as a means of getting the waste out of SONGS as soon as possible. Most members thought a permanent storage option would be best but all agreed on the merits of pushing for CIS in case permanent options are not available. We have not spoken with everyone, but from those we did interview we heard no strong support for requiring that the "California strategy" be limited to California sites. Most, in fact, recognized that it will be easier to site CIS facilities outside California.

Several members expressed concern that once the fuel is loaded into dry casks and stored on site that it will be easy to forget about it. There is strong motivation to solve this problem today because the fuel is in pools and not yet in casks. Some members also expressed concern about the unknown cost for all this and whether this would affect rates.

A few members expressed concerns that whatever entity takes the spent fuel must be subjected to strict oversight and regulation. If that entity is not the government then perhaps the need for oversight will be even greater.

Some members are concerned about the impact of extreme NIMBYism on the ability to implement anything—even to get approval to ship waste to CIS facilities. (In June we met with a visiting delegation of senior DOE officials; much of the discussion focused on similar concerns. More documents from that meeting, including a summary of the key issues discussed, will be shared with the CEP once we have them from DOE.)

We heard a range of views about the right political strategies that should be followed. Some folks wanted us to put more pressure on the federal government—presumably through Rep. Issa. Others thought Sacramento

was vital. Some saw merit in the various resolutions that have been adopted by local towns and councils; others, though, saw that the local political groups had little power over the key decisions and would find few allies in councils that weren't located right next to nuclear sites.

As we see it, a critical issue to discuss next week is what to do next. Mindful that the CEP is not a decision making body, this is also an area where robust public comment would be useful.

CEP VIEWS ON THE CEP

Nearly everyone thought the CEP was doing very well. A few members are concerned that the CEP is being used as a means of gauging public reactions to decisions that Edison takes on its own; most, however, see the CEP as delivering on its goal of engaging the public and providing a two-way conduit for information. Most particularly commended our workshops and meetings focused on storage of spent fuel and CIS as examples of where and how the CEP can be useful. Presentations were nearly all very useful and informative, and most members made a special point of thanking Edison for its attention to the quality of the presented material and discussions.

Several members expressed concern about our momentum now that we have covered the main topics. We also heard concerns about the need for Edison to keep high level attention focused on long-term stewardship of SONGs; right now the plant commands senior attention and has high quality leadership, but this must not be allowed to slip.

We heard a range of views about the public comment period. Most saw this as an essential element of community engagement. Some saw lots of repetition by some engaged members of the community. Most CEP members saw the public comment period as both essential and about as efficient as it could be. Several welcomed the efforts we are making to sharpen that part of the meeting.

Most CEP members saw the agendas for our meetings as reflective of public

concerns and thus appropriate. Some mentioned the need to diversify the range of topics we discuss and wondered whether there will be enough material to sustain interest as the decommissioning process matures. CEP members seemed generally comfortable with the items flagged for the agenda in the next few meetings.

There was a range of views about the quality of the website, and some CEP members pointed out that materials are still not available in a timely way and hard to find on the site.

To: SONGS Community Engagement Panel (CEP)

From: David G. Victor
Tim Brown
Dan Stetson

Re: Moving SONGS spent nuclear fuel: the role of Consolidated Interim Storage (CIS)

Date: 25 August 2015

Summary

This memo explores the options available to the CEP as we consider the question of how to move the spent nuclear fuel from the San Onofre site as quickly as possible. Action at the federal level continues to be an option, but a much more promising option lies with “consolidated interim storage (CIS).” Some private companies, notably in Texas and New Mexico, are already emerging that could take the spent fuel from SONGS and other power plants and store it until a permanent repository, such as Yucca Mountain, becomes available. The CEP has discussed this option extensively and learned that there is substantial and growing grassroots political support for offsite CIS.

Whether CIS becomes reality will depend on a huge amount of political, regulatory and policy spadework. There are questions surrounding transportation routes, funding, and many other topics that could become severe obstacles to making CIS a reality. State-level support for this option will be critical, and this memo suggests that we explore options in Sacramento for creating a select committee in the State Legislature and/or a program at the California Energy Commission (CEC) to develop an interim storage strategy for the state.

In addition, we suggest that CEP members should continue their efforts to reach out to local city councils, other governing bodies, environmental groups and other key stakeholders to build awareness of the importance of CIS for the San Onofre communities and the State of California more generally.

The issues

Over the last 18 months the CEP has devoted a substantial amount of attention to the challenges of storing high-level nuclear waste. Most of the waste generated at the plant during decommissioning is so-called “low level” nuclear waste and will be shipped to permanent repositories. That process is already under way.

But the high-level waste—in particular, the spent fuel rods—seem destined to remain at the site for the foreseeable future. The original “deal” at nuclear plants envisioned that the federal government would charge operators of nuclear power plants for the service of removing the fuel from each site and storing it permanently at a single national repository— currently in the form of Yucca Mountain. For years, the government charged operators for this service—with the money amassing in a trust fund—and began the process of building and licensing Yucca Mountain. Now, due to the political landscape and possible environmental issues, Yucca Mountain may never come to fruition. Indeed, the Department of Energy recognizes this fact and is now developing alternative sites and technologies for the permanent storage of defense nuclear waste that originally was to be stored at Yucca. Meanwhile, nuclear plant operators have successfully sued to stop paying into the trust fund with the understandable logic that they should not be paying the government for a service the government has no practical plan for delivering. Yucca might yet open one day, or it might be dead in the water.

That leaves us in the communities surrounding San Onofre in a difficult situation. We have looked closely at the technologies that will be used to store the fuel in dry casks on site. Those technologies are robust, but they need short and long term oversight and we have a good process in place for ensuring that the appropriate oversight is in place.¹ It makes little sense for San Onofre and the growing number of other decommissioning sites to leave fuel on site for the long haul, even after major decommissioning has been completed. People want the spent fuel moved out of their community.

Proposals for CEP Action

Over the last year we have seen a seismic shift in how the United States might store spent fuel. Two major companies have announced plans to build CIS facilities—one in West Texas and the other in southeastern New Mexico. Plans for yet more facilities may emerge as well. In addition, the Department of Energy has signaled that it too, favors CIS as a practical way to store spent fuel. The DOE has done this even as they continued with efforts to bring the beleaguered Yucca Mountain permanent repository online. New legislative proposals that are supportive of CIS, including legal reforms needed to help pay the cost for CIS, are advancing in both the House and the Senate.

The CEP has discussed these developments several times, and the tenor of our discussions has been highly supportive. Done well, CIS could allow SONGS to move spent fuel out of our community.

¹ David G Victor, “Safety of Long-Term Storage in Casks: Issues for San Onofre,” Report of the Chairman of the Community Engagement Panel of the San Onofre Nuclear Generating Station, 9 December 2014. Songscommunity.com

The CEP discussions have also made it clear that CIS won't happen automatically. Many other reactors have spent fuel that can be stored at these sites, and failure to offer practical solutions to a host of problems, such as transport of the spent fuel out of California, could make CIS impractical for us.

The discussions we have had within the CEP point to three concrete sets of actions.

First, we should continue the process of building grassroots political support for CIS. This requires continuing the efforts to pass city council and other resolutions in communities around the plant—and to ensure that those resolutions are supportive of a prompt movement of spent fuel from SONGS. It also requires canvassing major stakeholders, including environmental and consumer groups, to solicit their support and to explain why CIS is important.

Second, we should work with Sacramento to ensure California and possibly the entire west coast get ready for CIS. At present, the debate around nuclear waste in California has mostly focused on lamenting the lack of a serious federal policy. We must help Sacramento understand that there are now alternatives that could be feasible in the right regulatory and political environment. The discussions within the CEP and with experts on CIS policy and regulation strongly suggest that we in the San Onofre communities could do all the needed spadework ourselves. Many of the issues revolve around state regulation and we need a state-based strategy. Building that strategy will require an organization that is well-linked to the relevant state regulatory bodies yet also has analytical capabilities and experience with developing politically viable and technically-informed policy strategies. It may be important to pursue efforts that build awareness and support within the California legislature. To do that we need to engage the key Senators and members of the Assembly.

It may be useful to gain the support of the California Energy Commission (CEC) to do a strategic regulatory analysis that could lay the groundwork to make CIS a reality. Doing that would require answering a series of questions—some technical and others political. The CEC is uniquely qualified to answer these questions:

- What would be appropriate sequencing of shipments—which waste should be shipped first and what should be left on site longer?
- If problems arise with the use of NWF funds to pay for transport and interim storage how could state regulators and trust fund administrators backstop contributions from in-state reactors?
- What kinds of test shipments and activities will be needed to certify that rail and road transport systems are licensed and adequately regulated? If the storage facility is located in another state—for example, Texas—what kinds of bilateral regulatory cooperation would be needed so that testing regimes developed in one jurisdiction would be recognized in another (e.g., Arizona and New Mexico)? How should California engage effectively with other groups, notably the Western Interstate Energy Board (WIEB), that have already done extensive work in this

area so that private developers see an effective but favorable regulatory environment rather than a discouraging cacophony of state rules?

- As sites are developed in other states should California or Californian operators of nuclear sites contribute to testing and development of those sites?
- Can California credibly defer to the NRC to regulate shipments, as currently required under federal law, or would the state impose other rules and regulations?
- Do state agencies (including the CEC) need additional authority from NRC or other federal bodies in order to advance a state-led effort to advance consolidated interim storage.
- Do the states need to develop a CIS Engagement Agreement that would demonstrate their commitment to the idea as well as establish responsible agencies, clear lines of communication and common objectives?
- Can California delegate to the US Department of Transportation (DoT) to develop transport routes and the needed consent from the communities along those routes? Or should California itself—either at the state level or through the counties that do something to jump start or oversee that process?

Private firms that are developing (or considering) consolidated interim storage see the waste in California as a huge opportunity. To encourage a private interim solution to our waste problem, we need credible answers to these types of questions above. The CEP would want to work with others—including BPC and Western Interstate Energy Board (WIEB) as well as the CEC—to help articulate a full list of questions needing addressed. The CEP discussions suggest, that when the time is right, we should invite representatives from these firms to visit the CEP and talk about their plans with the public.

Third, we should consider what might be done at the federal level. So far, the CEP has not had much discussion of this topic and there may be little that we can actually do. We should track the legislation moving through Congress. As we develop support for CIS we should brief our DC representatives to make them aware of the importance of CIS for California. We should be supportive and inviting of the DOE efforts to make CIS a reality and help them where we can—including with invitations to the head of the DOE effort (John Kotek) to visit the CEP. We will need advice on whether there is more that can and should be done in DC.

We have a strong interest in demonstrating credibility and interest to as many consolidated interim storage facilities as possible. So far there may be at least two projects at various stages of preparedness—the PFS facility and now the Waste Control Specialists facility in Andrews County along the Texas/New Mexico Border—with perhaps several others to appear in the coming years. For us, there is good news with competition in the industry and options for policy makers—so that, unlike Yucca mountain, we are not held hostage to problems at one site.

San Onofre Community Engagement Panel
Strategic Plan:
Advocating for Federal Legislation to Enable Consolidated Interim Storage (CIS)
November 2016

1. Situation

- 1.1. Most stakeholders in California are aligned on need to safely store used nuclear fuel and promptly ship fuel offsite to an interim storage facility or geologic repository
- 1.2. Senate (S 854) and House (HR 3643) bills both enjoy bipartisan support
- 1.3. Two CIS facilities already in planning (WCS in Texas, Eddy-Lea in New Mexico)

2. Objectives

- 2.1. Make CIS a reality
- 2.2. Be prepared to begin shipping fuel once CIS facilities are available

3. Strategies

- 3.1. Advocate for federal legislation needed to enable CIS
- 3.2. Target the California delegation of federal elected officials (particularly newly elected officials and those not yet engaged on this issue) to bolster support for CIS
- 3.3. Leverage existing alliances:
 - 3.3.1. Decommissioning Plants Coalition, whose members include other owners of decommissioning commercial nuclear plants in the West
 - 3.3.2. Western Interstate Energy Board, High-Level Radioactive Waste Committee
- 3.4. Keep discussions at a high level (move fuel, prioritize decommissioning plants) to maximize alliances with decommissioning sites and defer granular issues (which decommissioning sites go first) so as to avoid near-term disputes
- 3.5. Work with the California Energy Commission (CEC) to understand its role with CIS and the roles of other state agencies (CPUC, CalTrans, CHP, Office of Emergency Services)
 - 3.5.1. Prepare a letter from the CEP to the CEC or other state agency to set forth the CEP's perspective on the importance of moving SONGS fuel offsite and to underscore the importance of an integrated strategy for state-level transportation planning
 - 3.5.2. Determine which if any state agencies require budget augmentation to support their planning efforts

4. Tactics

- 4.1. Messaging: Develop message platform to be used in advocacy efforts which includes affirmative reasons to support CIS, rebuttals for opposition to CIS, "DOs & DON'Ts," and a call-to-action such as encouraging members to review House/Senate legislation and consider co-sponsoring

- 4.2. Analyze Impact of November Elections: Determine the results of the election, including president, authorizing committees, appointees to federal agencies, and new California members of the House and Senate
- 4.3. One-on-One Briefings: Leverage state-level support – as evidenced by Assembly Joint Resolution 29 (Chavez) and Senate Joint Resolution 23 (Bates) – to educate and engage federal officials on CIS and include encouraging members to review House and Senate legislation and consider co-sponsoring
- 4.4. Alliances: Build alliances to extend reach and impact
 - 4.4.1. In the West, collaborate with existing alliances such as Western Interstate Energy Board, Western Governors Association, and/or Concerned Coastal Cities Coalition
 - 4.4.2. In DC, collaborate with existing alliances such as the Decommissioning Plants Coalition, Bipartisan Policy Center, and the advocacy community
- 4.5. Workshop: As needed, conduct workshop for federal elected officials to provide background on challenge of storing used fuel on an interim and permanent basis
- 4.6. “Echo Chamber”: Create an “echo chamber” around all proposed legislation to build interest, momentum, and broad-based support during what may be a multi-year effort before passage
- 4.7. DC Advocacy Trip: Consider taking a group of regional stakeholders, including local and state elected officials, to Washington DC to advocate for CIS

5. Timing

- | | |
|-------------------------------|--------------------------------|
| 5.1. Develop Message Platform | October / November |
| 5.2. One-on-one Briefings | November / December |
| 5.3. Workshop | December / January (if needed) |
| 5.4. DC Advocacy Trip | 1Q 2017 |

Testimony of Prof. David G. Victor, Chairman of the San Onofre Community Engagement Panel, before the House Oversight and Government Reform Subcommittee on Interior, Energy and Environment
September 26, 2017

Subcommittee Chairman Farenthold, Ranking Member Plaskett, and members of the subcommittee, including Representative Issa and Representative Gomez, thank you for the invitation to testify today about the national problem of storage and disposal of spent nuclear fuel. About 35 years ago Congress laid out a plan for long-term disposal of spent fuel from the country's nuclear reactors: the Nuclear Waste Policy Act (NWPA) of 1982. Since passage of that law, the government has consistently failed to meet key deadlines to remove spent fuel from the 99 operating commercial reactors at 59 sites around the country.¹ Worse, there are now 17 reactors at 14 sites in 11 states that are no longer operating—reactors, such as at San Onofre in Southern California where the spent fuel will remain stuck onsite long after the rest of the site has been shut down and removed.²

The Department of Energy has collected upwards of \$750 million annually from customers into a fund that amassed \$46 billion dollars by late 2016, the most recent audit.³ These funds were intended to defray the cost of removal and long-term disposal of spent fuel. Instead, the funds sit essentially idle. A series of lawsuits has halted those payments for many utilities, and some utilities are now being paid damages from taxpayer funds to recover the cost of continued storage of their spent fuel beyond the time when it was supposed to be accepted by the government.

For many years, this persistent failure to perform was, outside the nuclear utility industry, largely unnoticed. Nearly all reactors that were built kept operating. Unable to ship spent fuel to a permanent repository they left it on site—in pools and in dry cask storage.

The situation today is completely different. While most of the US nuclear fleet continues to operate, a growing number of reactors are in the midst of decommissioning. For these sites, the inability to remove spent fuel is particularly deplorable. Local communities have seen most of the jobs associated with these reactors, along with many other benefits, disappear. They are watching massive deconstruction projects remove reactors domes, buildings and other facilities. Yet they are still left with the spent nuclear fuel onsite, without a proper home and without any indications as to when it will eventually be removed. Some

¹ Kim Cawley, "Testimony: The Federal Government's Responsibilities and Liabilities Under the Nuclear Waste Policy Act," Before the Subcommittee on Environment and the Economy, Committee on Energy and Commerce, U.S. House of Representatives (3 December 2015).

² For detail see generally NUREG 1350. <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/>

³ Office of the Inspector General, DOE, "Audit Report," OAI-FS-17-04 (December 2016).

solutions to this problem are coming into focus, but they require changes to federal law as well as new investments where Congress and the Administration must work together.

I testify today as Chairman of the San Onofre Nuclear Generating Station (SONGS) Community Engagement Panel (CEP). SONGS Units 2 and 3 are the largest commercial reactors slated for decommissioning in the country, and the political environment around the plant is more intense than almost anywhere in the country. I serve in that role as a volunteer. I am also a Professor at the School of Global Policy and Strategy (GPS) at UC San Diego where I am also an adjunct professor in Climate, Atmospheric Sciences and Physical Oceanography at the Scripps Institution of Oceanography.

Back in 2013 when the operator of the plant, Southern California Edison (SCE) decided to decommission the facility it also set up this panel to open a two-way conduit between SCE (and its co-owners, San Diego Gas and Electric, the City of Anaheim and the City of Riverside) and the communities that would be affected by the decommissioning process. Over the last three years the CEP has provided exactly that function. It has offered ways for SCE to learn about the concerns of the communities—for example; the impact of shrinking the SONGS emergency planning systems, now that the plant poses a lower hazard to the community, on the budgets of first responders, hospitals and other essential public services. It also offers a way for SCE to help inform the communities about how decommissioning will unfold; the economic and environmental impacts, and the various strategies being adopted to mitigate adverse impacts. We meet quarterly and have 17 members (with one vacancy)—all volunteers, drawn from the local communities and a blend of public officials, representatives from environmental NGOs, business, labor, and other stakeholders. We are not a formal decision-making body nor do we have official oversight functions—there are plenty of other bodies with those powers and responsibilities.⁴ I speak today as a private citizen who happens to be Chairman of the CEP, and I reflect on what we have learned over the three years of CEP operation.

Without a doubt, one topic has attracted the most attention at our CEP meetings and in the local communities: spent fuel. As in any community, there are many different views about a technology like nuclear power. With the closure of SONGS, I thought, that many of those diverging viewpoints would become moot and the communities could come together and focus on the best plan for decommissioning. Instead, many people have been shocked to learn that decommissioning of the plant does not mean removal of everything—the spent fuel remains because there is no place to send it. By not offering a practical place and method to ship spent fuel the Federal government has, through inaction, created a whole new array of acrimonious debates and controversy within local communities about how best to steward the spent fuel. I have observed and been in the middle of those debates for three years and the rest of my testimony outlines what I have seen and learned.

⁴ For more, including documents and video from every meeting, see www.songscommunity.com

The importance of moving the fuel out of local communities at decommissioned sites.

First, I can't emphasize enough the importance of offering practical ways for decommissioned sites to move spent fuel out of their communities to other, more appropriate locations. Offering a practical route to that outcome would be enormously valuable to our communities. That route could involve finishing Yucca Mountain and allowing consolidated interim storage (CIS), also known as interim storage facilities (ISF), and I'll talk about that next. But people are most looking for is a viable plan that addresses an urgent problem—a problem that is not so pressing in communities with operating reactors but is vitally important to those where reactors are undergoing decommissioning and will have stranded spent nuclear fuel left with reduced security at the decommissioning site.

We are particularly concerned that the current arrangements at the Department of Energy (DOE) are opaque about which spent fuels will ship first. This problem has not been important to solve over the last few decades because there was no place to ship. Today that might be different and I would urge Congress to help DOE develop a more coherent set of priorities. The current "standard contract" for fuel shipments, while ambiguous, suggests that the oldest fuel will ship first. That approach will create an inefficient and incoherent shipment pattern—with canisters moved across a patchwork of sites, and no site happy with the outcome. We should put the decommissioned sites first because those sites are no longer generating spent fuel, in most cases are removing reactors and support buildings, and gain much smaller economic benefit from hosting these facilities. By contrast, sites with operating reactors will always have spent fuel in their reactor cores, fuel pools and dry cask pads. For all these communities, it is important to have a viable long-term plan for spent fuel removal; for decommissioned sites the imperative is particularly compelling.

Political Realism

We in the San Onofre communities have learned that the politics of finding solutions to this problem are difficult. For years, Yucca Mountain has been a political lightning rod in ways that have made it exceptionally difficult—at times, impossible—to move forward with that site. The prospect of Consolidated Interim Storage might prove politically more tractable because, when combined with consent-based siting, it allows communities to nominate themselves to become storage sites. Following the guidance of the bipartisan Blue Ribbon Commission (BRC) report, we are encouraged that a process of informed consent has emerged and led to two communities volunteering themselves for CIS facilities. Today, my sense is that one of those sites is viable and that it enjoys healthy support from much of the local communities. The other site is owned by a company that paused its licensing process due to a planned acquisition which most likely will leave their CIS operations by the wayside. The viable site is in New Mexico where the governor of New Mexico has given approval for this CIS facility. The local entity that owns the land Eddy-Lea Energy Alliance (ELEA) wants the facility that is set to monitor at least 10,000 dry storage canisters in partnership with Holtec International. The ELEA is composed of

cities of Carlsbad and Hobbs and the counties of Eddy and Lea. The community purchased the 1000 acres and has strong local support for the CIS facility. This is the model we must continue to pursue of the government working with communities to find volunteers who want to help deal with the national crisis of stranded spent nuclear fuel around the country. Earlier this year we hosted officials from ELEA at a CEP meeting, and I was impressed by the level of planning and awareness.

In the densely populated communities around San Onofre, our interest is to advance any responsible program that moves the spent fuel out of our neighborhoods as quickly as possible. For us, that means Yucca and CIS simultaneously. Over the last three years, we have learned three important things about how to pursue this goal.

First, the nation does not benefit from monopolies. To some degree, the problems at Yucca Mountain are the result of the country having just one option. As that option has faltered the whole nation's industry, along with communities around nuclear power plants, have suffered. The original plan, way back when the NWPA was signed into law, was to have two sites. Expedience in public sector spending and noxious politics whittled that roster down to one, and that outcome has been harmful. I am very concerned that the same will happen with CIS. Overall, the nation and the communities that are hosting spent nuclear fuel would benefit from having many options.

Second, and equally important, it is crucial that CIS be viewed as a complement to Yucca Mountain (and to other means of permanent spent fuel disposal—for example, deep borehole technology). I appreciate that over the last year that much of the newfound enthusiasm for acting on spent fuel is rooted in a desire to restart Yucca Mountain. But any realistic scenario for Yucca must deal with the reality that Yucca is still a long time coming. The site is not operational. Once operational, fuel will need repackaging so that casks with large numbers of fuel assemblies are put into smaller units with fewer assemblies and lower heat loads. All that will take time.

For the communities around San Onofre, those realistic delays in starting Yucca create the imperative for CIS. We want the spent fuel moved. For the nation as a whole, those delays offer an important logic for CIS: safety and saving money. It is much wiser to store spent fuel at a small number of large sites, far from population centers, than dozens of sites scattered around the country. Scientists at Oak Ridge National Laboratory have estimated the cost savings from a robust CIS program and found that we could avoid \$15-30b in expenditure in light of expected delays in reopening Yucca Mountain.⁵ Fiscal prudence demands that CIS be part of the overall strategy.

⁵ For an overview see J. Jarrell "Does Consolidated Interim Storage Make Sense in an Integrated Waste Management System?" Oak Ridge National Laboratory, NEI Used Fuel Management Conference, May 2017, Savannah, GA. Numbers here are undiscounted. For discounting and sensitivity analysis see: Cost Sensitivity Analysis for Consolidated Interim Storage of Spent Fuel: Evaluating the Effect of Economic Environment Parameters (Cumberland et al., FCRD-NFST-

Third, the political coalitions around nuclear power are in flux when it comes to spent fuel. There is a well-known debate about the role of nuclear power in the nation's future energy mix, and active industry efforts to improve performance to keep as many of the existing fleet operational. There are also well-known battle lines drawn for and against nuclear power. What has impressed me about spent fuel is that those battle lines have shifted. Many groups that have been skeptical or outright against operational nuclear plants—such as the Natural Resources Defense Council and the Union of Concerned Scientists—are aligned in favor of finding smart strategies for storing spent fuel, including CIS. It is really important that the larger, heated and probably irreconcilable differences about operational reactors not cloud the fact that many more communities are coming together to find solutions to storing spent fuel.

For Congress, these three lessons suggest that the current efforts—far advanced in the House and still developing in the Senate—to amend the NWPA are profoundly important. As those efforts proceed it is important that the Yucca mission, which has attracted more attention and political energy, not leave CIS aside.

Toward a Long-term Strategy: the Roles of Stewardship and Transportation

Compared with three years ago, there has been striking progress, especially in the House, toward new legislation that would address many of the obstacles to restarting Yucca and also authorizing a new program of consolidated storage. While that is admirable, we also need to grapple with the consequences of a long delay in arriving at this point. It is also crucial to grapple with the fact that most people outside Washington are skeptical that Washington can organize and motivate itself to make practical changes in law and back those with reasonable appropriations. What I have seen in the local communities around San Onofre is concern that Washington is so broken that reasonable bipartisan legislation, such as smart amendments to the NWPA, can't survive the legislative process.

This skepticism has three practical implications. First, while there are some actions that DOE or NRC can do to advance consolidated storage and promote smart stewardship of the nation's spent nuclear fuel, the most important actions require a change in federal law. Getting House (HR 3053) and Senate versions into conference is essential, lest Congress itself be seen as a central obstacle to progress in what has been, so far, largely an Executive Branch failure to deliver on promises made to the American people—especially the people living within the foot prints of nuclear reactors. I have testified at the NRC about their efforts to streamline the regulatory process, which are admirable.⁶ But the reality is that the NRC is already doing what

2016-000721, Rev. 1 ORNL/SR-2016/681) Available at <https://curie.ornl.gov/content/cost-sensitivity-analysis-consolidated-interim-storage-spent-fuel-evaluating-effect-economic>

⁶ 2014. David G. Victor. Decommissioning at San Onofre: The Community Engagement Experience. Testimony to the Nuclear Regulatory Committee. For more information see

it can; even without streamlining of the regulatory process for decommissioned sites those sites are finding ways to cope with NRC procedures through exemptions. What everyone is waiting for is enabling federal law.

Second, because of these delays—and skepticism about when they will be resolved—the nation’s nuclear sites are now gearing up to monitor and manage spent nuclear fuel casks in ways that were never intended. The original plan was that spent fuel would be removed from reactor cores, cooled in pools onsite, and then put into canisters and casks for brief local storage and expeditious removal. Because that last step in the chain has never happened, the canisters and cask systems are now aging in place. At the urging of the CEP, SCE has developed an extensive program for monitoring the casks and inspecting the canisters while they are on site.⁷ Recent legal challenges and settlements have reinforced that effort.⁸ We are fortunate in that other sites built dry cask systems before SONGS and we can learn from their aging management programs. To give you a sense of just how long the delays have extended, as of today several sites have seen the original 20 year NRC license for on-site dry cask storage run its course, with each getting a 40-year renewal. At the most recent CEP meeting we devoted the entire session to this topic.⁹

Third is transportation. There is an understandable tendency in Washington to do what can be done. This tendency has generated legislation that focuses on Yucca Mountain and brings CIS along. But we must focus, now, on the reality that all of these strategies will not work unless there are viable ways to move spent fuel from reactor sites to CIS and/or permanent repositories. The US Navy safely ships defense spent nuclear fuel and related materials around the country on a regular basis—thousands of shipments—using an effective and credible government planning system and emergency training for its routes. This system must be available to the DOE as it takes authority over spent nuclear fuel transportation. The NRC has procedures ready for use in this area (NUREG 0725). Safe transportation of spent commercial reactor fuel is not a technical problem, but it is one that needs careful administrative planning and political awareness.

A serious transportation plan would have several elements:

- A program for testing and building railroad cars for moving spent fuel casks. This is a DOE responsibility, and with current appropriations DOE will test a prototype rail car (along with other support cars) over the next 2 years. That’s good news, but there are

<https://www.nrc.gov/reading-rm/doc-collections/commission/slides/2014/20140715/victor-20140715.pdf>

⁷ 2014. David G. Victor. Safety of long-term storage of spent nuclear fuels at SONGS. Report of the Chairman of the Community Engagement Panel of the SONGS. For more information see https://www.songscommunity.com/docs/LongTermStorageofSpentFuel_120914.pdf

⁸ 2017. Citizens Oversight, Inc. V. Southern California Edison. For more information see https://www.songscommunity.com/doc_library_settlement.asp

⁹ 2017. 3Q Meeting of the Community Engagement Panel. Oceanside, California. For more information see <http://www.songscommunity.com/091417CEPMeetingAgenda.pdf>

no appropriations to build a fleet of these cars as will be needed to move spent fuel expeditiously. Elsewhere I have outlined the state of play and costs, which are small.¹⁰

- The states and regions must get ready. When DOE was planning to move waste from the nuclear weapons sites—such as in Colorado and Washington—state and regional officials got organized to help plan routes, safety and procedures. The states where these sites were shipping nuclear materials had an incentive to make this work because they wanted the sites cleaned up. By contrast, very little to none of the necessary spadework for local, state and regional planning of spent fuel shipments has been done. There is legislation in California that would help.¹¹ The CEP has reached out to the California Energy Commission on this topic.¹² And the Western Governors Association could easily be tapped—as could regional state associations in other parts of the country. The problem is that nobody has believed that serious solutions for spent nuclear fuel would be forthcoming. Now that they are, the transportation planning processes must gear up—with a key role for the Federal government.

All the authority needed to fix this problem does not rest with Congress but many are looking to Congress for leadership and initiative in getting the process started. A good start would be to ensure that a title on transportation is included in NWSA Amendments (inserted, presumably, in Conference), appropriations to build the needed railcar system are included in a timely way (probably starting next fiscal year), and the states are encouraged if not mandated to get organized. Under plausible yet optimistic scenarios, CIS facilities could be open in the early 2020s. Spent fuel at SONGS (and many other sites) would be ready for shipment then. It would be a pity if all the work done to open storage and permanent disposal facilities falters for lack of attention to transportation.

Final Words

In a large and diverse nation such as ours, there always seems to be a more pressing and urgent matter that captures political attention. Meanwhile, critical questions about the nuclear industry and its infrastructure remain unanswered for decades while leaving un-spent billions of dollars. Inaction has pushing these questions to future generations to answer.

These delays only succeed in creating distrust in the ability of government to find a workable solution, anger towards the plant operators and creates an impossible future for those communities that involuntarily host these sites. All we ask is that those who can act and make a difference, do so with all possible urgency.

¹⁰ David Victor, Tim Brown and Dan Stetson, “Participants in 12 June telephone call with DOE to discuss transportation of spent nuclear fuel,” 26 June 2017, see www.songscommunity.com

¹¹ 2017. Nuclear Waste Policy Amendments Act of 2017. For more information see <https://www.congress.gov/bill/115th-congress/house-bill/3053>

¹² Letter from David Victor, Tim Brown and Dan Stetson to Robert Weisenmiller, Chairman of the California Energy Commission, 12 December 2016. see www.songscommunity.com

A plan for smart removal of spent nuclear fuel from the nation's commercial reactors is now coming into focus. It will require new legislation and a new focus by the federal government, as well as the states and regional planning authorities.

I see three steps as essential. First, the political deal must be done that allows for consolidated interim storage, and that deal as far as I can tell centrally requires restarting the Yucca Mountain process. Yucca and CIS should be seen as complements to each other. Politically they are combined; economically and technically they are also combined because interim storage allows for a more rational long-term strategy that includes opening a permanent storage facility. Second, a fresh look at the priorities for removing spent fuel is needed. When options for sending the fuel become viable there will be much more fuel ready to move than the system can handle. We think decommissioned sites should be high in the queue. Third, a viable strategy for transportation is needed—a topic that has been orphaned by the lack of suitable places to send the fuel. Transportation requires some funds (small, mainly for rail cars and planning) and crucially that federal, state and other officials begin working together on strategies.

Congressional Field Hearing – June 7, 2019
House Committee on Oversight and Reform - Subcommittee on Environment
Representative Harley Rouda, Chairman

Dan Stetson, Witness
Vice Chair, SONGS Community Engagement Panel

Introduction

Good morning Mr. Chairman and members of the Subcommittee. Thank you for the opportunity to appear and testify at today's hearing. My name is Dan Stetson¹ and I serve as Vice Chairman of the Community Engagement Panel or "CEP" for the San Onofre Nuclear Generating Station, or "SONGS" for short.

CEP History

I was invited here today to serve as a representative of the SONGS CEP. The CEP was formed early 2014 after the retirement of SONGS in 2013. The purpose of the CEP is to serve as a bridge and conduit between SCE and the local communities.

The 18 members² of the CEP represent a range of stakeholders, from environmental NGOs and Native American Tribes to business and organized labor. More than half are local elected officials – from Oceanside to Dana Point - sworn to represent best interests of their constituents. All are volunteers.

There are three officers including Chairman Dr. David Victor of UCSD ... myself, Dan Stetson, Vice Chairman ... and Jerry Kern, immediate past city council member from Oceanside. Officers provide input to SCE on agenda topics and public engagement.

We hold quarterly meetings and periodic workshops. All are open to the public for transparency. Meetings are webcast live and video recordings are posted online.³ We provide one full hour for public comment.

¹ See appendix for resume

² List of CEP members is available at <https://www.songscommunity.com/community-engagement/community-engagement-panel>

³ Past CEP meetings may be viewed at <https://www.songscommunity.com/community-engagement/meetings>

What's Important?

Over the past 5-plus years, the CEP has addressed a variety of issues that are important to the local communities.

But I have learned that there really are just a couple of truly important issues. The first is safety managing the spent fuel while it is on site and the second is removing the spent fuel from the site.

Dry Cask Storage Canisters

Let me first address on-site storage and, more specifically, dry cask storage. This is what we on the CEP have come to call “defense-in-depth” for dry cask storage. Defense in depth means looking at the full complement of means to support safe on-site storage of spent fuel.

This starts with design and fabrication of the spent fuel canisters, while also considering operations, maintenance and security, as well as canister inspections, and—if needed—remediation of a compromised canister.

Dry cask storage has been addressed frequently at CEP meetings in the past 5-plus years. I am proud to say I am among those on the SONGS CEP who have advocated with SCE to help shape the utility’s approach to spent fuel management. Edison has taken concrete steps to address areas of interest. One such step is laser peening the welds on the new canisters to minimize the risk of chloride-induced stress corrosion cracking of the canister shells.

Offsite Storage and/or Disposal

The second important issue is moving the spent fuel offsite. Over the years, most but not all members of local communities also have expressed an interest in moving the spent fuel offsite from San Onofre to a federally licensed storage or disposal facility. Offsite storage has been addressed frequently at CEP meetings over time.

Just consider the costs. As the schedule for the Department of Energy to pick up spent fuel continues to slip, the 2018 Audit Report of the Office of the Inspector

General⁴ estimates that slippage costs to American tax payers of over 35 billion dollars, or approximately 2.2 million dollars per day.

To address offsite storage, Chairman David Victor delivered testimony⁵ the fall of 2017 before the House Oversight and Government Reform Subcommittee on Interior, Energy & Environment. David, Jerry, and I are among those CEP members who have met with members of the California Congressional delegation to advance federal legislation for spent fuel. In April, I met with 5 members of Congress and/or their staff, including staff from Representative Rouda's office.

Congressional outreach is part of a broader effort to try to effect changes to the Nuclear Waste Policy Act and enable consolidated interim storage and permanent disposal.

I appreciate the request by Representative Rouda and others for 25 million dollars in the Energy & Water Appropriations bill to help fund CIS, transportation, and infrastructure.

On behalf of the SONGS Community Engagement Panel, let me close by saying thank you for making this a top priority. We look forward to additional action in Congress to get spent fuel at San Onofre off site.

With the passage of the Nuclear Waste Policy Act of 1982, Congress made a solemn promise to the American people. To date that promise remains unfulfilled. We are counting on you to keep this promise and solve this seemingly intractable problem ... once and for all.

Thank you for your attention.

⁴ See appendix for the Audit Report and supporting material

⁵ See appendix for testimony

APPENDIX

Daniel T. Stetson

Dan has never had a job East of Pacific Coast Highway. He is currently the Executive Director and a Trustee of The Nicholas Endowment. The Endowment was created by Broadcom co-founder Dr. Henry Nicholas III and his wife Stacey Nicholas to provide meaningful support to charitable organizations in the advancement of science, education and the arts.

Dan also serves as vice chairman of the Community Engagement Panel (CEP) established in February 2014 to encourage open communication, public involvement and education throughout the decommissioning of San Onofre nuclear plant. The CEP was established by current and former owners of San Onofre responsible for decommissioning: Southern California Edison, San Diego Gas & Electric, and the cities of Riverside and Anaheim.

Dan served as President and CEO of the Ocean Institute from 2005-2015, after having joined the Institute in 1992. The Ocean Institute is an educational non-profit organization located in Dana Point, California that provides inspiring marine science and maritime history programs for over 100,000 students annually. Under Dan's leadership, the programs became nationally renowned and received the inaugural Walter Cronkite Award for Excellence in Maritime Education.

Immediately prior to his tenure at the Ocean Institute, Dan consulted for the law firm of Pillsbury, Madison & Sutro representing a foreign shipping company involved in an oil spill incident. Dan managed the compensation process for over 2,000 claimants from the largest oil spill in the LA Harbor's history. While the spill was originally attributed to his client's cargo ship, Dan's efforts led to the discovery of evidence that the majority of the spill (93%) was actually from a previously unidentified ship. Dan testified as an expert witness in criminal court. In the resulting civil trial, 100% of the client's multimillion dollar clean up and claims expenses were recovered.

Dan has a BA from UC Santa Barbara and an MBA from California State University, Fullerton. He is a veteran of the US Coast Guard. Together with Roxanne, his wife of 33 years, Dan enjoys hiking, tennis, and diving.



OFFICE OF INSPECTOR GENERAL

U.S. Department of Energy

AUDIT REPORT

DOE-OIG-19-08

November 2018

DEPARTMENT OF ENERGY NUCLEAR WASTE FUND'S FISCAL YEAR 2018 FINANCIAL STATEMENT AUDIT



Department of Energy
Washington, DC 20585

November 27, 2018

**MEMORANDUM FOR THE DIRECTOR, OFFICE OF STANDARD CONTRACT
MANAGEMENT**

Sarah B. Nelson

FROM: Sarah B. Nelson
Assistant Inspector General
for Audits and Administration
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on the "Department of Energy Nuclear
Waste Fund's Fiscal Year 2018 Financial Statement Audit"

The attached report presents the results of the independent certified public accountants' audit of the balance sheets of the Department of Energy Nuclear Waste Fund, as of September 30, 2018, and 2017, and the related statements of net cost, changes in net position, and statements of budgetary resources for the years then ended.

To fulfill Office of Inspector General audit responsibilities, we contracted with the independent public accounting firm of KPMG LLP to conduct the audit, subject to our review. KPMG LLP is responsible for expressing an opinion on the Nuclear Waste Fund's financial statements and reporting on applicable internal controls and compliance with laws and regulations. The Office of Inspector General monitored audit progress and reviewed the audit report and related documentation. This review disclosed no instances where KPMG LLP did not comply, in all material respects, with generally accepted Government auditing standards. The Office of Inspector General did not express an independent opinion on the Nuclear Waste Fund's financial statements.

KPMG LLP concluded that the combined financial statements present fairly, in all material respects, the respective financial position of the Nuclear Waste Fund as of September 30, 2018, and 2017, and its net costs, changes in net position, and budgetary resources for the years then ended, in conformity with United States generally accepted accounting principles.

As part of this review, auditors also considered the Nuclear Waste Fund's internal controls over financial reporting and tested for compliance with certain provisions of laws, regulations, contracts, and grant agreements that could have a direct and material effect on the determination of financial statement amounts. The results of the auditors' review disclosed no instances of noncompliance or other matters required to be reported under generally accepted Government Auditing Standards or applicable Office of Management and Budget guidance.

Attachment

cc: Chief Financial Officer, CF-1
Director, Office of Finance and Accounting, CF-10
Deputy Director, Office of Finance and Accounting, CF-10
Assistant Director, Office of Financial Policy and Internal Controls, CF-12
Division Director, Office of Financial Policy and Internal Controls, CF-12
Audit Resolution Specialist, Office of Financial Policy and Internal Controls, CF-12

Audit Report: DOE-OIG-19-08

INDEPENDENT AUDITORS' REPORT

**UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND**

Annual Financial Report

**As of and for the Years Ended
September 30, 2018 and 2017**

November 13, 2018

**UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND**

Annual Financial Report
September 30, 2018 and September 30, 2017

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Management's Discussion & Analysis

Reporting Entity

The Nuclear Waste Policy Act of 1982 (NWPA) (Public Law 97-425) established the Office of Civilian Radioactive Waste Management (OCRWM) within the United States (U.S.) Department of Energy (Department or DOE). OCRWM's mission was to manage and dispose of the Nation's spent nuclear fuel (SNF) and high-level radioactive waste (HLW). The Nuclear Waste Policy Amendments Act of 1987 (Title V, Public Law 100-203) directed the Secretary of Energy to characterize only the Yucca Mountain site in Nevada as a candidate site to determine if it was suitable for a repository for SNF and HLW.

Once the characterization of the Yucca Mountain site was completed, the Secretary recommended the site to the President. In July 2002, the President signed into law the Congressional Joint Resolution designating Yucca Mountain as the site for the Nation's first SNF and HLW repository. In 2008, OCRWM submitted a license application to the U.S. Nuclear Regulatory Commission (NRC or the Commission) seeking authorization to construct the Yucca Mountain repository.

In fiscal year (FY) 2009, the previous Administration decided to terminate the Yucca Mountain Project. In January 2010, at the direction of the President, the Secretary announced the formation of the Blue Ribbon Commission (BRC), which was shortly followed by the FY 2011 Budget Request with a zero budget request for OCRWM. In March 2010, the Department filed a motion to withdraw with prejudice the Yucca Mountain License Application pending before the Atomic Safety and License Board (ASLB or Board), the independent adjudicatory body of the Nuclear Regulatory Commission (NRC or Commission). In June 2010, the ASLB issued an order denying the Department's motion to withdraw the License Application, which the Department appealed to the Commission. By the beginning of FY 2011, the Department had disbanded OCRWM, and shifted OCRWM program responsibilities to various Departmental Program Secretarial Offices. Among these shifts, the Office of General Counsel (OGC) is now responsible for ongoing litigation and oversight of regulatory activities associated with the NWPA, the Nuclear Waste Fund (NWF), and the Standard Contract for the Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste (10 CFR 961) with utilities (Standard Contract).

In July 2011, a lawsuit was filed against the NRC in the U.S. Court of Appeals for the District of Columbia (DC) Circuit requesting that the court order the NRC to continue reviewing the Yucca Mountain license application.

In September 2011, the NRC issued its decision in which the Commission (1) announced it was split evenly on the question whether the NRC's ASLB had properly refused to allow the Department's motion to withdraw the Yucca Mountain construction license application with prejudice, and (2) unanimously held that "budgetary limitations" required the ASLB to dispose of pending matters by the end of FY 2011 and to document the history of the adjudicatory process. Subsequently, the ASLB issued a memorandum and order suspending the adjudicatory portion of the licensing proceeding due to uncertainty regarding the availability of future appropriations from the NWF to pay for future proceeding and a lack of staff to continue the proceeding. The adjudicatory portion of the licensing proceeding remains suspended due to lack of appropriations.

The BRC submitted a final report in January 2012 with its recommendations for consideration by the Administration and Congress, as well as interested state, tribal and local governments, other stakeholders, and the public.

In August 2013, the U.S. Court of Appeals for the DC Circuit issued an order to the NRC to promptly continue with the legally mandated licensing proceeding unless and until Congress authoritatively says otherwise or there are no appropriated funds remaining.

In November 2013, the NRC requested the Department prepare the supplemental environmental impact statement (EIS) that the NRC staff determined was needed for purposes of the review of the application under the National Environmental Policy Act (NEPA). In October 2014, the Department provided an updated version as of July 30, 2009, entitled, *Analysis of Postclosure Groundwater Impacts for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada*. In May 2016, the NRC subsequently issued the report as the *Supplement to the U.S. Department of Energy's Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada (NUREG-2184, Final Report)*.

No funds for Yucca Mountain were requested in the FY 2017 Budget Request. Funds for Yucca Mountain were requested in the FY 2018 and FY 2019 Budget Requests, but not received. Funds remaining prior to disbanding OCRWM have been used between October 1, 2010 and September 30, 2018 to continue the management of the NWF, litigation activities, for additional closure activities under the previous Administration, and for exploratory activities under the current Administration to prepare for a resumption of DOE participation in the licensing proceeding pursuant to the FY 2018 and 2019 Budget Requests. The funds are managed by the Office of Nuclear Energy.

In accordance with the NWPA, the Department entered into more than 68 Standard Contracts with utilities in which, in return for payment of fees into the NWF, the Department agreed to begin disposal of SNF by January 31, 1998. Because the Department has no facility available to receive SNF under the NWPA, it has been unable to begin disposal of the utilities' SNF as required by the contracts. Significant litigation claiming damages for partial breach of contract has ensued as a result of the Department's delay.

Fiscal Year 2018 and 2017 Financial Performance

The principal financial statements have been prepared to report the financial position and results of operations of the entity, pursuant to the requirements of 31 United States Code 3515 (b). While the statements have been prepared from the books and records of the entity in accordance with Generally Accepted Accounting Principles for Federal entities and the formats prescribed by the Office of Management and Budget (OMB), the statements are in addition to the financial reports used to monitor and control budgetary resources, which are prepared from the same books and records. The statements should be read with the realization that they are for a component of the U.S. Government, a sovereign entity.

The NWF consists of fees paid by the owners and generators of SNF from commercial reactors, in accordance with provisions of their contracts with the Department for disposal services. NWF assets in excess of those authorized by Congress to pay Nuclear Waste Policy Act costs are

invested in U.S. Treasury securities. On November 19, 2013, the U.S. Court of Appeals for the District of Columbia Circuit found that the Department did not have a legitimate basis to evaluate the ongoing fee and directed the Department to propose to Congress a reduction of the ongoing fee to zero. The Department complied and such proposal became effective on May 16, 2014. The Nuclear Waste Policy Act originally provided that the federal government would pay the costs of defense-generated nuclear waste directly into the Nuclear Waste Fund. However, Congress in 1993 changed that requirement to instead establish a separate Defense Nuclear Waste Disposal appropriation (DNWDA).

As of September 30, 2018, cumulative billings from fees and the DNWDA, totaled approximately \$25.4 billion; and cumulative interest earnings and other revenue totaled approximately \$27.8 billion. As of September 30, 2018, cumulative expenditures by the Department from appropriations and amounts authorized by Congress, including direct appropriations to the NRC, the now defunct Office of the Nuclear Waste Negotiator, and the Nuclear Waste Technical Review Board, totaled approximately \$11.4 billion.

As of September 30, 2018 and 2017, the U.S. Treasury securities held by the NWF were \$39.2 billion and \$37.6 billion, respectively, and had a fair value of \$43.4 billion compared to \$44.5 billion.

Offsetting NWF investments and receivables are deferred revenues, which reflect the cumulative fees billed, related accrued interest, and investment income in excess of expenditures since inception. As of September 30, 2018 and 2017, the combined deferred revenue balance was \$41.9 billion and \$40.3 billion, respectively. The increase from investment income and net gains from the maturity of securities was \$1.5 billion for FY 2018 and FY 2017.

The Department estimates the remaining liability associated with the partial breach of the Standard Contract and has reflected that amount on the Commitments and Contingencies line of the balance sheet. As of September 30, 2018 and 2017, the estimate of the remaining liability from SNF litigation was \$28.1 billion and \$27.2 billion, respectively. Since no appropriation related to fulfilling the Department's NWPA obligations was received for FY 2019, an additional year of delay was added to the current estimate. Judgments and settlements for damages related to the partial breach are paid by the Judgment Fund.

ANALYSIS OF SYSTEMS, CONTROLS, AND LEGAL COMPLIANCE

Analysis of systems, controls, and legal compliance is performed, reported, and audited at the Departmental level. The results of these reviews and assessments are incorporated in the Department's Annual Financial Report. A significant issue, SNF and HLW Disposal, was reported by management in FY 2018 and FY 2017 and is described below.

Federal Managers' Financial Integrity Act

The Federal Managers' Financial Integrity Act (FMFIA) of 1982 requires that agencies establish internal control and financial systems to provide reasonable assurances that the integrity of Federal programs and operations are protected. Furthermore, it requires that the head of the agency provide an annual assurance statement on whether the agency has met this requirement and whether any material weaknesses exist.

In response to the FMFIA, the Department developed an internal control program which holds managers accountable for the performance, productivity, operations, and integrity of their programs through the use of management controls. Annually, senior managers at the Department are responsible for evaluating the adequacy of the internal controls surrounding their activities and determining whether they conform to the principles and standards established by the Office of Management and Budget, and the Government Accountability Office. The results of these evaluations and other senior management information are used to determine whether there are any internal control problems to be reported as material weaknesses. The Departmental Internal Control and Audit Review Council, the organization responsible for oversight of the Management Control Program, makes the final assessment and decision for the Department.

Significant Issue - SNF AND HLW DISPOSAL

The government's acceptance of SNF and HLW, authorized under the NHPA, has been delayed by various factors.

Actions Taken and Remaining

The previous Administration issued the "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Waste" on January 11, 2013 (Strategy), but no Congressional action was taken to fully implement the Strategy. The key assumptions from the Strategy were: that (1) a pilot storage facility will be operational in 2021 to allow for the removal of SNF from shut down reactors; (2) an interim storage facility will be operational in 2025 to begin the removal of SNF from operating nuclear power reactors and (3) that reactors will incur costs reimbursable by the Department until the Department has fulfilled its obligations under the agreements.

In March 2017, the current Administration submitted *America First - A Budget Blueprint to Make America Great Again* to Congress that included the restart of licensing activities for the Yucca Mountain nuclear waste repository and initiation of a robust interim storage program which were subsequently reflected in the Administration's FY 2018 Budget Request in May 2017. In February 2018, the Administration's FY 2019 Budget Request again included the restart of licensing activities for the Yucca Mountain nuclear waste repository. However, no funding was provided related to the Yucca Mountain repository in the Consolidated Appropriations Act for FY 2018 passed in March 2018 or the Energy and Water, Legislative Branch, and Military Construction and Veterans Affairs Appropriations Act, 2019, passed in September 2018.



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Independent Auditors' Report

Acting Inspector General, United States Department of Energy and
United States Department of Energy Nuclear Waste Fund:

Report on the Financial Statements

We have audited the accompanying financial statements of the United States Department of Energy (Department) Nuclear Waste Fund, which comprise the balance sheets as of September 30, 2018 and 2017, and the related statements of net cost, changes in net position, and statements of budgetary resources for the years then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America, in accordance with the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, and in accordance with Office of Management and Budget (OMB) Bulletin No. 19-01, *Audit Requirements for Federal Financial Statements*. Those standards and OMB Bulletin No. 19-01 require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the United States Department of Energy Nuclear Waste Fund as of September 30, 2018 and 2017, and its net costs, changes in net position, and budgetary resources for the years then ended in accordance with U.S. generally accepted accounting principles.

KPMG LLP, a Delaware limited liability partnership and the U.S. member firm of the KPMG network, a Swiss entity, is a member firm of the KPMG network, a Swiss entity, which is a member of the KPMG network, a Swiss entity, which is a member of the KPMG network, a Swiss entity.



Emphasis of Matter

As discussed in Note 9 to the financial statements, the Department is involved as a defendant in several matters of litigation relating to its liability to accept commercial spent nuclear fuel by January 1, 1998, the date specified in the Nuclear Waste Policy Act of 1982, as amended. The Department of Energy Nuclear Waste Fund has recorded an estimate of its liability related to this matter of \$28.1 billion and \$27.2 billion as of September 30, 2018 and 2017, respectively. Our opinion is not modified with respect to this matter.

Other Matters

Required Supplementary Information

U.S. generally accepted accounting principles require that the information in the Management's Discussion and Analysis section be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Federal Accounting Standards Advisory Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audits of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audits were conducted for the purpose of forming an opinion on the basic financial statements as a whole. The Other Information – Schedules I and II – is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information has not been subjected to the auditing procedures applied in the audits of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on it.

Other Reporting Required by Government Auditing Standards

Internal Control over Financial Reporting

In planning and performing our audit of the financial statements as of and for the year ended September 30, 2018, we considered the United States Department of Energy Nuclear Waste Fund's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the United States Department of Energy Nuclear Waste Fund's internal control. Accordingly, we do not express an opinion on the effectiveness of the United States Department of Energy Nuclear Waste Fund's internal control. We did not test all internal controls relevant to operating objectives as broadly defined by the *Federal Managers' Financial Integrity Act of 1982*.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A material weakness is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the United States Department of Energy Nuclear Waste Fund's financial statements will not be prevented, or detected and corrected, on a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal



control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether the United States Department of Energy Nuclear Waste Fund's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards* or OMB Bulletin No. 19-01.

Purpose of the Other Reporting Required by Government Auditing Standards

The purpose of the communication described in the Other Reporting Required by *Government Auditing Standards* section is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the United States Department of Energy Nuclear Waste Fund's internal control or compliance. Accordingly, this communication is not suitable for any other purpose.

KPMG LLP

Washington, DC
November 13, 2018

UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND

Balance Sheets
As of September 30, 2018 and 2017
(Dollars in thousands)

	FY 2018	FY 2017
ASSETS		
Intragovernmental:		
Fund Balance with Treasury ^(Note 3)	\$ 10,718	\$ 15,697
Investments and Related Interest, Net ^(Note 4)	<u>39,195,614</u>	<u>37,670,986</u>
Total Intragovernmental Assets	39,206,332	37,686,683
Accounts Receivable:		
Utilities ^(Note 5)	2,660,601	2,619,525
General Property, Plant, and Equipment, Net ^(Note 6)	<u>120</u>	<u>122</u>
Total Assets	<u>\$ 41,867,053</u>	<u>\$ 40,306,330</u>
LIABILITIES		
Intragovernmental: ^(Note 8)		
Accounts Payable	\$ 127	\$ 16
Deferred Revenue ^(Notes 7 and 10)	636,627	634,424
Other Liabilities	<u>197</u>	<u>197</u>
Total Intragovernmental Liabilities	636,951	634,637
Accounts Payable and Other Liabilities	453	1,863
Deferred Revenue ^(Note 10)	41,222,235	39,658,012
Commitments and Contingencies ^(Note 9)	<u>28,111,003</u>	<u>27,247,874</u>
Total Liabilities ^(Note 8)	<u>69,970,642</u>	<u>67,542,386</u>
NET POSITION		
Unexpended Appropriations - Other Funds	7,414	11,818
Cumulative Results of Operations - Other Funds	<u>(28,111,003)</u>	<u>(27,247,874)</u>
Total Net Position	<u>(28,103,589)</u>	<u>(27,236,056)</u>
Total Liabilities and Net Position	<u>\$ 41,867,053</u>	<u>\$ 40,306,330</u>

The accompanying notes are an integral part of these statements.

UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND
Statements of Net Cost
For the Years Ended September 30, 2018 and 2017
(Dollars in thousands)

	FY 2018	FY 2017
First Repository Costs	\$ 4,857	\$ 3,011
All Other Program Costs:		
Program Support	196	69
Transfers of Appropriations ^(Note 7)	3,600	3,600
Waste Acceptance, Storage and Transportation	1,583	1,949
Total All Other Program Costs	5,379	5,618
Total First Repository and Other Program Costs	10,236	8,629
Less Earned Revenues ^(Note 10)	(10,236)	(8,629)
Net First Repository Costs & Other Program Costs	-	-
Estimated costs for waste acceptance obligations	1,421,685	3,290,256
Net Cost of Operations	\$ 1,421,685	\$ 3,290,256

The accompanying notes are an integral part of these statements.

UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND
Statements of Changes in Net Position
For the Years Ended September 30, 2018 and 2017
(Dollars in thousands)

	FY 2018	FY 2017
CUMULATIVE RESULTS OF OPERATIONS		
Beginning Balance	\$ (27,247,874)	\$ (24,689,260)
Other Financing Sources (Non-Exchange):		
Imputed Financing from Costs Absorbed by Others	558,556	731,642
Total Other Financing Sources	558,556	731,642
Net Cost of Operations	(1,421,685)	(3,290,256)
Net Change	(863,129)	(2,558,614)
Ending Balance - Cumulative Results of Operations	\$ (28,111,003)	\$ (27,247,874)
UNEXPENDED APPROPRIATIONS		
Beginning Balance	\$ 11,818	\$ 14,151
Budgetary Financing Sources Related to Appropriations:		
Appropriations Used	(4,404)	(2,333)
Total Budgetary Financing Sources Related to Appropriations	(4,404)	(2,333)
Ending Balance - Unexpended Appropriations	7,414	11,818
Total Net Position	\$ (28,103,589)	\$ (27,236,056)

The accompanying notes are an integral part of these statements.

UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND
Statements of Budgetary Resources
For the Years Ended September 30, 2018 and 2017
(Dollars in thousands)

	FY 2018	FY 2017
BUDGETARY RESOURCES		
Unobligated Balance from Prior Year Budget Authority, Net	\$ 11,111	\$ 19,899
Appropriations ^(Note 2)	<u>-</u>	<u>-</u>
Total Budgetary Resources	<u>\$ 11,111</u>	<u>\$ 19,899</u>
Memorandum (non-add) Entries:		
Net adjustments to unobligated balance brought forward, Oct 1	\$ 1,319	\$ 1,395
STATUS OF BUDGETARY RESOURCES		
New Obligations and Upward Adjustments (Total) ^(Note 12)	\$ 2,950	\$ 10,107
Unobligated Balance, End of Year:		
Apportioned, Unexpired Accounts	1,643	1,206
Exempt from Apportionment, Unexpired Accounts	<u>6,518</u>	<u>8,586</u>
Unobligated Balance, End of Year	<u>8,161</u>	<u>9,792</u>
Total Budgetary Resources	<u>\$ 11,111</u>	<u>\$ 19,899</u>
OUTLAYS, NET		
Outlays, Net	\$ 7,933	\$ 3,935
Distributed Offsetting Receipts	<u>(1,538,926)</u>	<u>(1,664,724)</u>
Nuclear Waste Fund Outlays, Net	<u>\$ (1,530,993)</u>	<u>\$ (1,660,789)</u>

The accompanying notes are an integral part of these statements.

UNITED STATES DEPARTMENT OF ENERGY NUCLEAR WASTE FUND

Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(1) Legislative Background

The Nuclear Waste Policy Act of 1982 (NWPAct) was signed into law on January 7, 1983. The NWPAct establishes a framework for the financing, siting, licensing, operating and decommissioning of one or more mined geologic repositories for the Nation's spent nuclear fuel (SNF) and high-level radioactive waste (HLW) which is to be carried out by the Department of Energy (Department or DOE). In addition, the NWPAct contains other provisions including:

- Assigning responsibility for the payment of disposal costs to the owners and generators of SNF and HLW and creating a special Nuclear Waste Fund (NWF) within the Department of Treasury of the United States for the collection of fees to cover such costs;
- Providing for contracts between the Department and the owners and generators of SNF and HLW pursuant to which the Department is to take title to the SNF or HLW as expeditiously as possible, following commencement of repository operations and, in return for payment of fees established by the NWPAct, to begin disposal of the SNF or HLW not later than January 31, 1998; and
- Requiring evaluation of the use of civilian disposal capacity for the disposal of HLW resulting from atomic energy defense activities (Defense HLW). In April 1985, the President notified the Department of his determination that a separate defense waste repository was not necessary and directed the Department to proceed with arrangements for disposal of such waste. Fees, equivalent to those paid by commercial owners, must be paid for this service by the Federal Government.

On December 22, 1987, the President signed into law the Budget Reconciliation Act, Subtitle A Title V, of which contained amendments to the NWPAct. The legislation directed the Department to characterize only the Yucca Mountain site in Nevada as a candidate site for the first repository. The legislation also provided for the termination of site-specific activities at all candidate sites other than the Yucca Mountain site, within 90 days of enactment, and for phasing out, not later than six months after enactment, all research programs in existence that were designed to evaluate the suitability of crystalline rock as a potential repository host medium.

In fiscal year (FY) 2009, the President and the Department's Secretary announced that a repository at Yucca Mountain was not a workable option and that the repository program would be terminated. At that time, they also announced that a Blue Ribbon Commission would be established to evaluate disposal alternatives. Accordingly, on January 29, 2010, the Department's Secretary announced the formation of a Blue Ribbon Commission on America's Nuclear Future to provide recommendations for developing a safe, long-term solution to managing the Nation's SNF and HLW. The Blue Ribbon Commission submitted a final report in January 2012 with their recommendations on these issues for consideration by the Administration and Congress, as well as interested state, tribal and local governments, other stakeholders, and the public. On February 1, 2010, the President issued the FY 2011 Budget Request with a zero budget request for the Nuclear Waste Fund Appropriation and the Defense Nuclear Waste Disposal Appropriation (formerly known as and reported under the Office of Civilian Radioactive Waste Management (OCRWM) prior to FY 2011). Consequently, the Department closed OCRWM on September 30, 2010, and, on October 1, 2010, the Department reassigned prior responsibilities for the operations of OCRWM and its assets and liabilities within the Department, herein referred to as the NWF. In March 2017, the Administration submitted *America First – A Budget Blueprint to Make America Great Again* to Congress that included the restart of licensing activities for the Yucca Mountain nuclear waste repository, which was subsequently reflected in the Administration's FY 2018 Budget Request in May 2017. In February 2018, the Administration's FY 2019 Budget Request again included the restart of licensing activities for the Yucca Mountain nuclear waste repository. However, no funding was provided related to the Yucca Mountain repository in the Consolidated Appropriations Act for FY 2018 passed in March 2018 or the Energy and Water, Legislative Branch, and Military Construction and Veterans Affairs Appropriations Act, 2019, passed in September 2018.

UNITED STATES DEPARTMENT OF ENERGY NUCLEAR WASTE FUND

Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(2) Significant Accounting Policies

Basis of Presentation – These financial statements have been prepared to report the financial position and results of operations of the NWF and include all activity related to the Nuclear Waste Fund Appropriation and the Defense Nuclear Waste Disposal Appropriation, used for the disposal of SNF and HLW (formerly reported under the Office of Civilian Radioactive Waste Management). The financial statements have been prepared from the books and records of the Department for the NWF in accordance with accounting principles generally accepted in the United States of America as applicable to Federal entities and presentation guidelines in Office of Management and Budget (OMB) Circular A-136, Financial Reporting Requirements.

Basis of Accounting – The NWF's financial statements are prepared using the accrual method of accounting. Under the accrual method, revenues are recognized when earned, and expenses are recognized when a liability is incurred without regard to receipt or payment of cash. The NWF also uses budgetary accounting to facilitate compliance with legal constraints and to monitor its budget authority. On the Balance Sheets, assets and liabilities have been classified according to the type of entity with which the transactions were made. Intragovernmental assets and liabilities are those from or to other federal entities.

Revenue Recognition – Fees, related accrued interest, and investment income are recognized as exchange (earned) revenue to the extent of expenses incurred, subject to Congressional authorization as discussed below. Fees billed, related accrued interest, and investment income in excess of current expenses are deferred.

The NWPA requires the civilian owners and generators of nuclear waste to pay their share of the full cost of the NWF and, to that end, establishes a fee for electricity generated and sold by civilian nuclear power reactors which the Department must collect and annually assess to determine its adequacy. A one-time fee (see Note 5) was recorded by the NWF as of April 7, 1983, related to the disposal of SNF generated prior to that date. Fees recognized by the NWF are based upon kilowatt (kWh) of electricity generated and sold by civilian nuclear reactors on and after April 7, 1983. The Department set the per kWh portion of the fee to zero in 2014.

Fees associated with the disposal of the Department's SNF and HLW are also recognized as the related costs are incurred and allocated. The methodology for allocating costs between SNF and HLW owned and managed by the Government (defense) and commercial (civilian) was developed by public rulemaking and published in the Federal Register in August 1987. This rule provides guidance for calculating the defense and civilian shares of total costs. The annual *Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program* (TSLCC) calculated the defense and civilian shares of program costs using this methodology. The most recent TSLCC was published in 2008.

Appropriations – Expenditure authority for the NWF has historically been provided by two separate appropriations. For fiscal years 2018 and 2017, Congress appropriated \$0 from the Defense Nuclear Waste Disposal Appropriation and the Nuclear Waste Disposal Appropriation to be used for nuclear waste disposal activities.

Fee payments and investment income are deposited into the NWF account and are made available to the Department through the annual expenditure authority provided by Congress. Investments are made in United States (U.S.) Treasury securities from funds in excess of current needs. If, at any time, monies available in the NWF are insufficient to discharge responsibilities under the NWPA, borrowings may be made from the U.S. Treasury. The NWPA limits the NWF from incurring expenditures, entering into contracts, and obligating amounts to be expended except as provided in advance by appropriation acts. Appropriated dedicated collections such as these are excluded from appropriations received on the Statements of Changes in Net Position.

**UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND**

Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(2) Significant Accounting Policies (continued)

Imputed Financing Sources – In certain instances, costs of the NWF are paid out of funds appropriated to other federal agencies. For example, payments under the terms of settlements and judgments are paid by the U.S. Treasury Judgment Fund (Judgment Fund). When costs directly attributable to NWF's operations are paid by other agencies, NWF recognizes these amounts in the *Statements of Net Cost*. In addition, these amounts are recognized as imputed financing sources in the *Statements of Changes in Net Position*.

Funds from Dedicated Collections – NWF follows Statement of Federal Financial Accounting Standards (SFFAS) No. 43, *Funds from Dedicated Collections*, which requires separate identification of funds from dedicated collections on the Balance Sheets, Statements of Changes in Net Position, and other selected footnotes.

Funds from dedicated collections are financed by specifically identified revenues, often supplemented by other financing sources, which remain available over time. These specifically identified revenues and other financing sources are required by statute to be used for designated activities, benefits or purposes, and must be accounted for separately from the Government's general revenues (see Note 11).

Investments – Investments are in U.S. Treasury securities and are stated at cost net of amortized premiums and discounts as it is the Department's intent to hold the investments to maturity. Premiums and discounts are amortized using the effective interest yield method. Investment interest is accrued on the outstanding investment balance using the applicable interest rate for the investments (see Note 4).

General Property, Plant, and Equipment – Purchases of general property, plant, and equipment (PP&E) exceeding \$50 are capitalized if they have a useful life greater than two years. PP&E is depreciated on a straight-line basis over the estimated useful lives of the assets. Useful lives range from 5 to 30 years. Maintenance costs are borne by NWF for equipment either on loan from or shared with other programs (see Note 6).

Accounts Receivable – Payment of accounts receivable will not be complete until NWF starts accepting waste. Interest is accrued quarterly on the outstanding amount receivable including accrued interest. The interest rate used is the 13-week U.S. Treasury bill rate. An allowance for doubtful accounts related to one-time spent fuel fees has not been recorded as of September 30, 2018 and 2017 (see Note 5).

Liabilities – Liabilities represent the amount of monies or other resources that are likely to be paid by NWF as the result of a transaction or event that has already occurred. However, no liability can be paid by NWF absent an appropriation. Liabilities for which an appropriation has not been enacted are therefore classified in these notes as liabilities not covered by budgetary resources and there is no certainty that the appropriation will be enacted. Also, liabilities other than contracts can be abrogated by the Government acting in its sovereign capacity.

Tax Status – NWF, as a part of the Department of Energy, which is a Federal agency, is not subject to federal, state, or local income taxes.

First Repository Costs – For the fiscal years ended September 30, 2018 and 2017, first repository costs consist primarily of Yucca Mountain shutdown costs. Historically, the general goals have been that of licensing and construction of a permanent repository for nuclear waste at Yucca Mountain and to be ready for acceptance of waste at the facility.

**UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND**

Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(2) Significant Accounting Policies (continued)

Use of Estimates – The preparation of financial statements requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Significant items subject to such estimates and assumptions include primarily commitments and contingencies.

(3) Fund Balance with Treasury

Summaries of the status of fund balances with the U.S. Treasury for appropriated and special funds as of September 30, 2018 and 2017 are as follows:

As of September 30, 2018	Appropriated Funds	Special Funds	Total
Unobligated budgetary resources			
Available	\$ 1,643	\$ 6,518	\$ 8,161
Obligated balance not yet disbursed			
Undelivered orders	5,772	5,449	11,221
Accounts payable and other liabilities	303	473	776
Budgetary resources invested in Treasury securities	-	(9,440)	(9,440)
Total FY 2018 Fund Balance with Treasury	\$ 7,718	\$ 3,000	\$ 10,718

As of September 30, 2017	Appropriated Funds	Special Funds	Total
Unobligated budgetary resources			
Available	\$ 1,206	\$ 8,586	\$ 9,792
Obligated balance not yet disbursed			
Undelivered orders	10,612	5,612	16,224
Accounts payable and other liabilities	883	1,194	2,077
Budgetary resources invested in Treasury securities	-	(12,396)	(12,396)
Total FY 2017 Fund Balance with Treasury	\$ 12,701	\$ 2,996	\$ 15,697

UNITED STATES DEPARTMENT OF ENERGY NUCLEAR WASTE FUND

Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(4) Investments and Related Interest, Net

For the fiscal years ended September 30, 2018 and 2017, the NWF received proceeds from the maturity of securities of \$2,870,834 and \$1,320,072, respectively.

Investments in U.S. Treasury securities held as of September 30 of each year consisted of the following:

	FY 2018	FY 2017
Intragovernmental Non-Marketable Market Based:		
Face Value	\$ 53,449,211	\$ 53,012,627
Unamortized discount, net	(14,375,049)	(15,443,938)
Interest receivable	121,452	102,297
Investments and related interest, net	39,195,614	37,670,986
Unrealized market gains, net	4,247,151	6,819,627
Investments at fair value	<u>\$ 43,442,765</u>	<u>\$ 44,490,613</u>

Pursuant to statutory authorization, fees collected from owners and generators of SNF that are in excess of those needed to pay current program costs are invested in Treasury securities. The federal government does not set aside assets to pay for expenditures associated with the funds for which the Department holds Treasury securities. These Treasury securities are an asset to the Department and a liability to Treasury. Because the Department and Treasury are both parts of the federal government, these assets and liabilities offset each other from the standpoint of the federal government as a whole. For this reason, they do not represent an asset or a liability in the U.S. Government-wide financial statements. Treasury securities provide the Department with authority to draw upon the U.S. Treasury to make expenditures, subject to available appropriations and Office of Management and Budget (OMB) apportionments. When the Department requires redemption of these securities, the federal government finances those expenditures out of accumulated cash balances by raising taxes or other receipts, by borrowing from the public, repaying less debt, or by curtailing other expenditures. This is the same way the federal government finances all other expenditures.

(5) Receivables Due from Utilities

Owners and generators of civilian SNF have entered into contracts with the Department for disposal services and for payment of fees to the NWF.

The NWPA specifies two types of fees to be paid to the NWF for disposal services: (a) a one-time charge per kilogram of heavy metal in solidified SNF existing prior to April 7, 1983; and (b) a one mil per kWh fee on all net electricity generated and sold by civilian nuclear power reactors on and after April 7, 1983. The kWh fees are due when billed. The contracts between the Department and the owners and generators of the waste provide three options for payment of the one-time spent fuel fee, one of which must have been selected by June 30, 1985, or within two years of contract execution. The options were:

1. Payment of the amount due, plus interest earned from April 7, 1983, in 40 quarterly installments with the final payment due on or before the first scheduled delivery of SNF to the Department;
2. Payment of the amount due, plus interest from April 7, 1983, in a single payment any time prior to the first delivery of SNF to the Department; or

**UNITED STATES DEPARTMENT OF ENERGY
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Notes to Financial Statements
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(Dollars in thousands unless otherwise noted)

(5) Receivables Due from Utilities (continued)

3. Payment of the amount due any time prior to June 30, 1985, or two years after contract execution, in the form of a single payment, with no interest due.

Under options (1) and (2), interest accrues from April 7, 1983 to the date of first payment at the 13-week U.S. Treasury bill rate compounded quarterly. Under option (1), beginning with the first payment, interest is calculated at the 10-year Treasury note rate in effect at the time.

In fiscal year 2018, no payments of one-time accrued spent fuel fees or accrued interest were received from owners and generators of civilian SNF. In fiscal year 2017, payments of \$50,394 of one-time accrued spent fuel fees and \$136,018 of accrued interest were received.

Per the NWPA, the Secretary of Energy shall annually review the adequacy of the fees established. In the event the Secretary of Energy determines either insufficient or excess revenue is being collected, the Secretary of Energy shall propose an adjustment to the fee to ensure full cost recovery. Because the U.S. Court of Appeals for the District of Columbia Circuit found the Department did not have a legitimate basis to evaluate or assess the ongoing kWh fee, the court directed the Department to propose to Congress a reduction of the ongoing kWh fee to zero. Such proposal became effective on May 16, 2014. In August 2014, the Department collected the remaining ongoing fee receivable balances. The circumstances have remained unchanged for FY 2018 and FY 2017 and no ongoing kWh fees were assessed or collected.

Accounts receivable from utilities at September 30 of each year were as follows:

	FY 2018	FY 2017
Accounts receivable:		
One-time spent nuclear fuel fees:		
Accounts receivable - one-time spent nuclear fuel fees		
Option (1)	\$ 144,273	\$ 144,273
Option (2)	560,170	560,170
Total accounts receivable one-time spent nuclear fuel fees	<u>704,443</u>	<u>704,443</u>
Accrued interest on one-time spent nuclear fuel fees:		
Option (1)	399,186	390,743
Option (2)	1,556,972	1,524,339
Total accrued interest on one-time spent nuclear fuel fees	<u>1,956,158</u>	<u>1,915,082</u>
Total accounts receivable	<u>\$ 2,660,601</u>	<u>\$ 2,619,525</u>

**UNITED STATES DEPARTMENT OF ENERGY
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Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(6) General Property, Plant, and Equipment, Net

General property, plant, and equipment and related accumulated depreciation consisted of the following as of September 30, 2018 and 2017:

	FY 2018	FY 2017
General property, plant, and equipment	\$ 7,134	\$ 7,233
Less accumulated depreciation	(7,014)	(7,111)
General property, plant, and equipment, net	<u>\$ 120</u>	<u>\$ 122</u>

(7) Transactions with the Department and Other Federal Government Agencies

The NWPA authorized the Secretary of Energy to carry out the provisions of the NWPA and created the Nuclear Waste Fund in the U.S. Treasury. The investment and borrowing powers of the NWF are limited to transactions with the U.S. Treasury. In discharging its obligations under the NWPA, the Department contracts for services with numerous contractors including other Federal Government agencies. Further, significant administrative services are provided by the Department.

As of September 30, 2018 and 2017, NWF owed other Federal Government agencies \$127 and \$16, respectively. For the fiscal years ended September 30, 2018 and 2017, NWF incurred costs of \$390 and \$130, respectively, for services and goods provided by other Federal Government agencies. In addition to these incurred costs, NWF made Congressional authorized transfers from the NWF to the Nuclear Waste Technical Review Board in the amount of \$3,600 for fiscal years 2018 and 2017.

NWF has entered into Memoranda of Agreement (MOA) with the Department's Office of Environmental Management and the Department's Office of Naval Nuclear Propulsion. The MOA established the terms and conditions for acceptance of Department-owned SNF and HLW (Defense Waste) for disposal. The estimated liabilities are included in the 2008 TSLCC that is used to calculate the estimate of the Department's share of total current and future program costs for Defense Waste. The Department has paid amounts in excess of its estimated share of costs and as a result has no liability to NWF as of September 30, 2018 and 2017.

As of September 30, 2018, the total cumulative share of costs for the Department's Defense Waste is estimated to be \$2,452,242 based on the methodology published in the Federal Register in August 1987 and interest owed is estimated to amount to \$672,737. As of September 30, 2018 and 2017, \$636,627 and \$634,424, respectively, was included in intragovernmental deferred revenue representing the Department's Defense HLW fees in the NWF in excess of the Department's cost share to-date.

**UNITED STATES DEPARTMENT OF ENERGY
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Notes to Financial Statements
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(Dollars in thousands unless otherwise noted)

(8) Liabilities Not Covered by Budgetary Resources

A summary of liabilities covered and not covered by budgetary resources as of September 30, 2018 and 2017 is as follows:

	FY 2018	FY 2017
Liabilities not covered by budgetary resources:		
Intragovernmental		
Deferred revenue (Note 10)	\$ 636,627	\$ 634,424
Non-Intragovernmental		
Deferred revenue (Note 10)	41,222,235	39,658,012
Commitments and contingencies (Note 9)	28,111,003	27,247,874
Total liabilities not covered by budgetary resources	69,969,865	67,540,310
Liabilities covered by budgetary resources:		
Intragovernmental		
Accounts payable	127	16
Other liabilities	197	197
Non-Intragovernmental		
Accounts payable and other liabilities	453	1,863
Total liabilities covered by budgetary resources	777	2,076
Total Liabilities	\$ 69,970,642	\$ 67,542,386

(9) Commitments and Contingencies

Spent Nuclear Fuel Litigation

In accordance with the NWPAs, the Department entered into more than 68 Standard Contracts with utilities in which, in return for payment of fees into the NWF, the Department agreed to begin disposal of SNF by January 31, 1998. Because the Department has no facility available to receive SNF under the NWPAs, it has been unable to begin disposal of the utilities' SNF as required by the contracts. Significant litigation claiming damages for partial breach of contract has ensued as a result of this delay.

To date, 40 suits have been settled involving utilities that collectively produce about 84 percent of the nuclear-generated electricity in the United States. Under the terms of the settlements, the Judgment Fund, 31 U.S.C. 1304, paid \$5.3 billion as of September 30, 2018 to the settling utilities for delay damages they have incurred through September 30, 2018. In addition, 57 cases have been resolved by 49 final unappealable judgments and eight voluntary withdrawals with no damages. Eight of the unappealable judgments resulted in an award of no damages by the trial court and the 41 remaining cases resulted in a total of \$2.1 billion in damages that have been paid by the Judgment Fund as of September 30, 2018.

The Department's SNF litigation liability is updated to include the effects of final judgments and settlements as well as payments to date from the Judgment Fund. Additional payments under these settled and adjudicated cases may be made if the utilities incur additional costs resulting from the Department's delay in acceptance of SNF. The Department believes its assumptions and methodology provide a reasonable basis for the contingent liability estimate.

**UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND**

Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(9) Commitments and Contingencies (continued)

An additional 15 cases remain pending the Court of Federal Claims. Liability is probable in these cases, and in many of these cases orders have already been entered establishing the Government's liability and the only outstanding issue to be litigated is the amount of damages to be awarded. Some years ago, the industry was reported to estimate that damages for all utilities with which the Department has contracts ultimately would be at least \$50 billion. The Department believes that the industry's estimate was highly inflated and that the disposition of the 89 cases that have either been settled or subject to a judgment in the trial court suggests that the Government's ultimate liability is likely to be significantly less than that estimate. Accordingly, based on these settlement estimates, the total liability estimate as of September 30, 2018 was \$35.5 billion. After deducting the cumulative amount paid of \$7.4 billion as of September 30, 2018 under these settlements and as a result of final judgments, the remaining liability is estimated to be approximately \$28.1 billion. Under current law, any damages or settlements in this litigation will be paid out of the Judgment Fund. The Department's contingent liability estimate for SNF litigation is reported net of amounts paid to date from the Judgment Fund.

The Department previously reported several developments that made it difficult to reasonably predict the amount of the Government's likely liability. In March 2017, the current Administration submitted *America First – A Budget Blueprint to Make America Great Again* to Congress that included the restart of licensing activities for the Yucca Mountain nuclear waste repository, which was subsequently reflected in the Administration's FY 2018 Budget Request in May 2017. In February 2018, the Administration's FY 2019 Budget Request again included the restart of licensing activities for the Yucca Mountain nuclear waste repository. However, no funding was provided related to the Yucca Mountain repository in the Consolidated Appropriations Act for FY 2018 passed in March 2018 or the Energy and Water, Legislative Branch, and Military Construction and Veterans Affairs Appropriations Act, 2019, passed in September 2018. The liability estimate assumes a FY 2020 restart of licensing activities, and uses timeframes contained in the NWPA and the Yucca Mountain License Application.

**UNITED STATES DEPARTMENT OF ENERGY
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Notes to Financial Statements
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(Dollars in thousands unless otherwise noted)

(10) Deferred Revenue

As described in Note 2, all fees, both kWh fees and Defense high-level radioactive waste fees, as well as the related interest and investment income, are recognized as revenue to the extent of expenses incurred. Amounts in excess of current expenses are deferred. Deferred revenue as of September 30, 2018 and 2017 was as follows:

	FY 2018	FY 2017
Intragovernmental		
Fees billed:		
Defense high-level waste fees	\$ 4,404	\$ 2,333
Interest:		
Income on investments	1,531,179	1,464,835
Non-intragovernmental		
Interest:		
One-time spent nuclear fuel fees	41,076	17,344
Other billings	3	26
Total billings and interest	1,576,662	1,484,538
Less earned revenue	(10,236)	(8,629)
Change in deferred revenue	1,566,426	1,475,909
Deferred revenue - beginning balance	40,292,436	38,816,527
Deferred revenue - ending balance	<u>\$ 41,858,862</u>	<u>\$ 40,292,436</u>

UNITED STATES DEPARTMENT OF ENERGY NUCLEAR WASTE FUND

Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(11) Dedicated Collections

	Dedicated Collections	All Other Funds	FY 2018	Dedicated Collections	All Other Funds	FY 2017
Balance Sheet						
Assets						
Fund Balance with Treasury	\$ 3,000	\$ 7,718	\$ 10,718	\$ 2,996	\$ 12,701	\$ 15,697
Investments, Net	39,195,614	-	39,195,614	37,670,986	-	37,670,986
Accounts Receivable	2,660,601	-	2,660,601	2,619,525	-	2,619,525
General Property, Plant, and Equipment, Net	98	22	120	99	23	122
Total Assets	\$ 41,859,313	\$ 7,740	\$ 41,867,053	\$ 40,293,606	\$ 12,724	\$ 40,306,330
Liabilities and Net Position						
Accounts Payable and Other Liabilities	\$ 473	\$ 304	\$ 777	\$ 1,193	\$ 883	\$ 2,076
Deferred Revenue	41,858,840	22	41,858,862	40,292,413	23	40,292,436
Commitments and Contingencies	-	28,111,003	28,111,003	-	27,247,874	27,247,874
Unexpended Appropriations	-	7,414	7,414	-	11,818	11,818
Cumulative Results of Operations	-	(28,111,003)	(28,111,003)	-	(27,247,874)	(27,247,874)
Total Liabilities and Net Position	\$ 41,859,313	\$ 7,740	\$ 41,867,053	\$ 40,293,606	\$ 12,724	\$ 40,306,330
Statement of Net Costs						
Total First Repository and Other Program Costs	\$ 5,832	\$ 4,404	\$ 10,236	\$ 6,287	\$ 2,342	\$ 8,629
Less Earned Revenues	(5,832)	(4,404)	(10,236)	(6,287)	(2,342)	(8,629)
Net First Repository Costs	-	-	-	-	-	-
Estimated liability for waste acceptance obligations	-	1,421,685	1,421,685	-	3,290,256	3,290,256
Net cost of operations	\$ -	\$ 1,421,685	\$ 1,421,685	\$ -	\$ 3,290,256	\$ 3,290,256
Statement of Changes in Net Position						
Beginning Balance - Cumulative Results of Operations	\$ -	\$ (27,247,874)	\$ (27,247,874)	\$ -	\$ (24,689,260)	\$ (24,689,260)
Imputed Financing from Costs Absorbed by Others	-	558,556	558,556	-	731,642	731,642
Net Cost of Operations	-	(1,421,685)	(1,421,685)	-	(3,290,256)	(3,290,256)
Ending Balance - Cumulative Results of Operations	\$ -	\$ (28,111,003)	\$ (28,111,003)	\$ -	\$ (27,247,874)	\$ (27,247,874)
Beginning Balance - Unexpended Appropriations						
Appropriations Used	-	(4,404)	(4,404)	-	(2,333)	(2,333)
Ending Balance - Unexpended Appropriations	-	7,414	7,414	-	11,818	11,818
Total Net Position	\$ -	\$ (28,103,589)	\$ (28,103,589)	\$ -	\$ (27,236,056)	\$ (27,236,056)

The NWPA requires the owners and generators of nuclear waste to pay their share of disposal costs into the NWF and, to that end, established a fee for electricity generated and sold by civilian nuclear power reactors which the Department must collect and annually assess to determine its adequacy. A special fund within Treasury was created to account for the collection of those fees. Fees collected in excess of expenses incurred are invested in Treasury securities and any interest earned is available to pay expenditures related to radioactive waste disposal activities covered by the NWF as appropriated by Congress and allotted by OMB.

(12) Explanation of Differences between the Statement of Budgetary Resources and the Budget of the United States Government

The President's Budget containing actual FY 2018 balances is expected to be published and available on the OMB website in February 2019. The NWF FY 2017 *Statements of Budgetary Resources* reconciled to the Budget of the United States by combining both of the budgets for Defense Nuclear Waste Disposal (89-X-0244) and Nuclear Waste Disposal (89-X-5227). Budgetary resources and obligations incurred are reconciled to the Departmental balances as published in the Appendix to the Budget; distributed offsetting receipts and net outlays are reconciled to the Departmental Balances in the Federal Program by Agency and Account section of the Analytical Perspectives Volume of the President's Budget.

**UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND**

Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(13) Reconciliation of Net Cost of Operations to Budget

The objective of this information is to provide an explanation of the differences between budgetary and financial (proprietary) accounting. This is accomplished by means of a reconciliation of budgetary obligations and non-budgetary resources available to the reporting entity with its net cost of operations.

	FY 2018	FY 2017
RESOURCES USED TO FINANCE ACTIVITIES:		
Budgetary Resources Obligated:		
Obligations Incurred	\$ 2,950	\$ 10,107
Less: Spending Authority from Offsetting Collections and Recoveries	(1,319)	(1,395)
Obligations, Net of Offsetting Collections and Recoveries	1,631	8,712
Offsetting Receipts:		
Fees for Disposal of Spent Nuclear Fuel	-	(50,394)
Earnings on Investments	(1,538,922)	(1,614,304)
Total Offsetting Receipts	(1,538,922)	(1,664,698)
Net Obligations	(1,537,291)	(1,655,986)
Other Resources:		
Imputed Financing from Costs Absorbed by Others	558,556	731,642
Other:		
Offsetting Receipts, Deferred	1,828,188	2,431,572
Adjustment for Department of Energy Appropriation	(4,404)	(2,333)
Total Other	1,823,784	2,429,239
Net Other Resources Used to Finance Activities	2,382,340	3,160,881
Total Resources Used to Finance Activities	\$ 845,049	\$ 1,504,895
RESOURCES USED TO FINANCE ITEMS NOT PART OF THE NET COST OF OPERATIONS:		
Change in Resources Obligated for Goods/Services/Benefits Ordered But Not Yet Provided	\$ 5,003	\$ (3,693)
Total Resources Used to Finance Items Not Part of the Net Cost of Operations	5,003	(3,693)
Total Resources Used to Finance the Net Cost of Operations	\$ 850,052	\$ 1,501,202
NET COST ITEMS THAT DO NOT REQUIRE OR GENERATE RESOURCES IN CURRENT PERIOD:		
Increases in Unfunded Liability Estimates	\$ 863,129	\$ 2,558,615
Components Not Requiring or Generating Resources:		
Depreciation and Amortization of Investment Premiums and Discounts	(291,492)	(769,535)
Revaluation of Assets and Liabilities	(4)	(26)
Total Components Not Requiring or Generating Resources	(291,496)	(769,561)
Total Net Cost Items That Do Not Require or Generate Resources in Current Period	571,633	1,789,054
NET COST OF OPERATIONS	\$ 1,421,685	\$ 3,290,256

**UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND**

Other Information - Schedule I
Schedule of Cumulative Net First and Second Repository Costs for the
Thirty Six Years Ended September 30, 2018 – **(Unaudited)**

(Dollars in thousands unless otherwise noted)

First Repository Costs	<u>\$ 7,520,595</u>
All Other Program Costs:	
Program Support	2,180,382
Transfers of Appropriations	677,897
Waste Acceptance, Storage and Transportation	777,217
Imputed and Other Costs	<u>152,506</u>
Total All Other Program Costs	<u>3,788,002</u>
Second Repository Costs	<u>108,896</u>
Total First and Second Repository Costs and Other Program Costs	11,417,493
Less Earned Revenue	<u>(11,398,957)</u>
Cumulative Net First and Second Repository Costs	<u><u>\$ 18,536</u></u>

**UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND**

Other Information - Schedule II
Schedule of Cumulative Billings and Interest and Deferred Revenue as of and for the
Thirty Six Years Ended September 30, 2018 – **(Unaudited)**

(Dollars in thousands unless otherwise noted)

Intragovernmental:

Fees billed:	
kWh fees	\$ 996,143
One-time spent nuclear fuel fees	174,598
Defense high-level waste fees	3,761,663
Interest:	
Income on investments	24,674,331

Non-intragovernmental:

Fees billed:	
kWh fees:	18,308,083
One-time spent nuclear fuel fees	2,174,802
Interest:	
One-time spent nuclear fuel fees	2,460,614
Other billings	707,585
Total billings and interest	53,257,819
Less earned revenue	<u>(11,398,957)</u>
Deferred revenue	<u>\$ 41,858,862</u>

FEEDBACK

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Estimated Taxpayer Liability Exceeds \$35 Billion

Date of Audit Report	Amount Paid from Taxpayer Funded Judgment Fund	DOE's Estimate* of Liability Including Amount Paid
9/30/2018	\$ 7.4 Billion	\$ 35.5 Billion
9/30/2017	\$ 6.9 Billion	\$ 34.1 Billion
9/30/2016	\$ 6.1 Billion	\$ 30.8 Billion
9/30/2015	\$ 5.3 Billion	\$ 29.0 Billion
9/30/2014	\$ 4.5 Billion	\$ 27.1 Billion
9/30/2013	\$ 3.7 Billion	\$ 25.1 Billion
9/30/2012	\$ 2.6 Billion	\$ 22.3 Billion
9/30/2011	\$ 1.6 Billion	\$ 20.7 Billion

***Over time, these estimates have been based on varying assumptions as to when DOE would begin removing fuel from reactor sites, ranging from 2021 in the 9/30/2013 estimate to 2029 in the 9/30/2018 estimates. Any further slippage in the schedule will cause actual liabilities to be higher than estimated.**

Source: DOE Annual Nuclear Waste Fund Audit Reports

Testimony of Prof. David G. Victor, Chairman of the San Onofre Community Engagement Panel, before the House Oversight and Government Reform Subcommittee on Interior, Energy and Environment

Subcommittee Chairman Farenthold, Ranking Member Plaskett, and members of the subcommittee, including Representative Issa and Representative Gomez, thank you for the invitation to testify today about the national problem of storage and disposal of spent nuclear fuel. About 35 years ago Congress laid out a plan for long-term disposal of spent fuel from the country's nuclear reactors: the Nuclear Waste Policy Act (NWPA) of 1982. Since passage of that law, the government has consistently failed to meet key deadlines to remove spent fuel from the 99 operating commercial reactors at 59 sites around the country.¹ Worse, there are now 17 reactors at 14 sites in 11 states that are no longer operating—reactors, such as at San Onofre in Southern California where the spent fuel will remain stuck onsite long after the rest of the site has been shut down and removed.²

The Department of Energy has collected upwards of \$750 million annually from customers into a fund that amassed \$46 billion dollars by late 2016, the most recent audit.³ These funds were intended to defray the cost of removal and long-term disposal of spent fuel. Instead, the funds sit essentially idle. A series of lawsuits has halted those payments for many utilities, and some utilities are now being paid damages from taxpayer funds to recover the cost of continued storage of their spent fuel beyond the time when it was supposed to be accepted by the government.

For many years, this persistent failure to perform was, outside the nuclear utility industry, largely unnoticed. Nearly all reactors that were built kept operating. Unable to ship spent fuel to a permanent repository they left it on site—in pools and in dry cask storage.

The situation today is completely different. While most of the US nuclear fleet continues to operate, a growing number of reactors are in the midst of decommissioning. For these sites, the inability to remove spent fuel is particularly deplorable. Local communities have seen most of the jobs associated with these reactors, along with many other benefits, disappear. They are watching massive deconstruction projects remove reactors domes, buildings and other facilities. Yet they are still left with the spent nuclear fuel onsite, without a proper home and without any indications as to when it will eventually be removed. Some solutions to this problem are coming into focus, but they require changes to federal law as well as new investments where Congress and the Administration must work together.

¹ Kim Cawley, "Testimony: The Federal Government's Responsibilities and Liabilities Under the Nuclear Waste Policy Act," Before the Subcommittee on Environment and the Economy, Committee on Energy and Commerce, U.S. House of Representatives (3 December 2015).

² For detail see generally NUREG 1350. <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/>

³ Office of the Inspector General, DOE, "Audit Report," OAI-FS-17-04 (December 2016).

I testify today as Chairman of the San Onofre Nuclear Generating Station (SONGS) Community Engagement Panel (CEP). SONGS Units 2 and 3 are the largest commercial reactors slated for decommissioning in the country, and the political environment around the plant is more intense than almost anywhere in the country. I serve in that role as a volunteer. I am also a Professor at the School of Global Policy and Strategy (GPS) at UC San Diego where I am also an adjunct professor in Climate, Atmospheric Sciences and Physical Oceanography at the Scripps Institution of Oceanography.

Back in 2013 when the operator of the plant, Southern California Edison (SCE) decided to decommission the facility it also set up this panel to open a two-way conduit between SCE (and its co-owners, San Diego Gas and Electric, the City of Anaheim and the City of Riverside) and the communities that would be affected by the decommissioning process. Over the last three years the CEP has provided exactly that function. It has offered ways for SCE to learn about the concerns of the communities—for example; the impact of shrinking the SONGS emergency planning systems, now that the plant poses a lower hazard to the community, on the budgets of first responders, hospitals and other essential public services. It also offers a way for SCE to help inform the communities about how decommissioning will unfold; the economic and environmental impacts, and the various strategies being adopted to mitigate adverse impacts. We meet quarterly and have 17 members (with one vacancy)—all volunteers, drawn from the local communities and a blend of public officials, representatives from environmental NGOs, business, labor, and other stakeholders. We are not a formal decision-making body nor do we have official oversight functions—there are plenty of other bodies with those powers and responsibilities.⁴ I speak today as a private citizen who happens to be Chairman of the CEP, and I reflect on what we have learned over the three years of CEP operation.

Without a doubt, one topic has attracted the most attention at our CEP meetings and in the local communities: spent fuel. As in any community, there are many different views about a technology like nuclear power. With the closure of SONGS, I thought, that many of those diverging viewpoints would become moot and the communities could come together and focus on the best plan for decommissioning. Instead, many people have been shocked to learn that decommissioning of the plant does not mean removal of everything—the spent fuel remains because there is no place to send it. By not offering a practical place and method to ship spent fuel the Federal government has, through inaction, created a whole new array of acrimonious debates and controversy within local communities about how best to steward the spent fuel. I have observed and been in the middle of those debates for three years and the rest of my testimony outlines what I have seen and learned.

⁴ For more, including documents and video from every meeting, see www.songscommunity.com

The importance of moving the fuel out of local communities at decommissioned sites.

First, I can't emphasize enough the importance of offering practical ways for decommissioned sites to move spent fuel out of their communities to other, more appropriate locations. Offering a practical route to that outcome would be enormously valuable to our communities. That route could involve finishing Yucca Mountain and allowing consolidated interim storage (CIS), also known as interim storage facilities (ISF), and I'll talk about that next. But people are most looking for is a viable plan that addresses an urgent problem—a problem that is not so pressing in communities with operating reactors but is vitally important to those where reactors are undergoing decommissioning and will have stranded spent nuclear fuel left with reduced security at the decommissioning site.

We are particularly concerned that the current arrangements at the Department of Energy (DOE) are opaque about which spent fuels will ship first. This problem has not been important to solve over the last few decades because there was no place to ship. Today that might be different and I would urge Congress to help DOE develop a more coherent set of priorities. The current "standard contract" for fuel shipments, while ambiguous, suggests that the oldest fuel will ship first. That approach will create an inefficient and incoherent shipment pattern—with canisters moved across a patchwork of sites, and no site happy with the outcome. We should put the decommissioned sites first because those sites are no longer generating spent fuel, in most cases are removing reactors and support buildings, and gain much smaller economic benefit from hosting these facilities. By contrast, sites with operating reactors will always have spent fuel in their reactor cores, fuel pools and dry cask pads. For all these communities, it is important to have a viable long-term plan for spent fuel removal; for decommissioned sites the imperative is particularly compelling.

Political Realism

We in the San Onofre communities have learned that the politics of finding solutions to this problem are difficult. For years, Yucca Mountain has been a political lightning rod in ways that have made it exceptionally difficult—at times, impossible—to move forward with that site. The prospect of Consolidated Interim Storage might prove politically more tractable because, when combined with consent-based siting, it allows communities to nominate themselves to become storage sites. Following the guidance of the bipartisan Blue Ribbon Commission (BRC) report, we are encouraged that a process of informed consent has emerged and led to two communities volunteering themselves for CIS facilities. Today, my sense is that one of those sites is viable and that it enjoys healthy support from much of the local communities. The other site is owned by a company that paused its licensing process due to a planned acquisition which most likely will leave their CIS operations by the wayside. The viable site is in New Mexico where the governor of New Mexico has given approval for this CIS facility. The local entity that owns the land Eddy-Lea Energy Alliance (ELEA) wants the facility that is set to monitor at least 10,000 dry storage canisters in partnership with Holtec International. The ELEA is composed of cities of Carlsbad and Hobbs and the counties of Eddy and Lea. The community purchased the 1000 acres and has strong local support for the CIS facility. This is the model we must continue

to pursue of the government working with communities to find volunteers who want to help deal with the national crisis of stranded spent nuclear fuel around the country. Earlier this year we hosted officials from ELEA at a CEP meeting, and I was impressed by the level of planning and awareness.

In the densely populated communities around San Onofre, our interest is to advance any responsible program that moves the spent fuel out of our neighborhoods as quickly as possible. For us, that means Yucca and CIS simultaneously. Over the last three years, we have learned three important things about how to pursue this goal.

First, the nation does not benefit from monopolies. To some degree, the problems at Yucca Mountain are the result of the country having just one option. As that option has faltered the whole nation's industry, along with communities around nuclear power plants, have suffered. The original plan, way back when the NWPAs were signed into law, was to have two sites. Expedience in public sector spending and noxious politics whittled that roster down to one, and that outcome has been harmful. I am very concerned that the same will happen with CIS. Overall, the nation and the communities that are hosting spent nuclear fuel would benefit from having many options.

Second, and equally important, it is crucial that CIS be viewed as a complement to Yucca Mountain (and to other means of permanent spent fuel disposal—for example, deep borehole technology). I appreciate that over the last year that much of the newfound enthusiasm for acting on spent fuel is rooted in a desire to restart Yucca Mountain. But any realistic scenario for Yucca must deal with the reality that Yucca is still a long time coming. The site is not operational. Once operational, fuel will need repackaging so that casks with large numbers of fuel assemblies are put into smaller units with fewer assemblies and lower heat loads. All that will take time.

For the communities around San Onofre, those realistic delays in starting Yucca create the imperative for CIS. We want the spent fuel moved. For the nation as a whole, those delays offer an important logic for CIS: safety and saving money. It is much wiser to store spent fuel at a small number of large sites, far from population centers, than dozens of sites scattered around the country. Scientists at Oak Ridge National Laboratory have estimated the cost savings from a robust CIS program and found that we could avoid \$15-30b in expenditure in light of expected delays in reopening Yucca Mountain.⁵ Fiscal prudence demands that CIS be part of the overall strategy.

⁵ For an overview see J. Jarrell "Does Consolidated Interim Storage Make Sense in an Integrated Waste Management System?" Oak Ridge National Laboratory, NEI Used Fuel Management Conference, May 2017, Savannah, GA. Numbers here are undiscounted. For discounting and sensitivity analysis see: Cost Sensitivity Analysis for Consolidated Interim Storage of Spent Fuel: Evaluating the Effect of Economic Environment Parameters (Cumberland et al., FCRD-NFST-2016-000721, Rev. 1 ORNL/SR-2016/681) Available at <https://curie.ornl.gov/content/cost-sensitivity-analysis-consolidated-interim-storage-spent-fuel-evaluating-effect-economic>

Third, the political coalitions around nuclear power are in flux when it comes to spent fuel. There is a well-known debate about the role of nuclear power in the nation's future energy mix, and active industry efforts to improve performance to keep as many of the existing fleet operational. There are also well-known battle lines drawn for and against nuclear power. What has impressed me about spent fuel is that those battle lines have shifted. Many groups that have been skeptical or outright against operational nuclear plants—such as the Natural Resources Defense Council and the Union of Concerned Scientists—are aligned in favor of finding smart strategies for storing spent fuel, including CIS. It is really important that the larger, heated and probably irreconcilable differences about operational reactors not cloud the fact that many more communities are coming together to find solutions to storing spent fuel.

For Congress, these three lessons suggest that the current efforts—far advanced in the House and still developing in the Senate—to amend the NWPA are profoundly important. As those efforts proceed it is important that the Yucca mission, which has attracted more attention and political energy, not leave CIS aside.

Toward a Long-term Strategy: the Roles of Stewardship and Transportation

Compared with three years ago, there has been striking progress, especially in the House, toward new legislation that would address many of the obstacles to restarting Yucca and also authorizing a new program of consolidated storage. While that is admirable, we also need to grapple with the consequences of a long delay in arriving at this point. It is also crucial to grapple with the fact that most people outside Washington are skeptical that Washington can organize and motivate itself to make practical changes in law and back those with reasonable appropriations. What I have seen in the local communities around San Onofre is concern that Washington is so broken that reasonable bipartisan legislation, such as smart amendments to the NWPA, can't survive the legislative process.

This skepticism has three practical implications. First, while there are some actions that DOE or NRC can do to advance consolidated storage and promote smart stewardship of the nation's spent nuclear fuel, the most important actions require a change in federal law. Getting House (HR 3053) and Senate versions into conference is essential, lest Congress itself be seen as a central obstacle to progress in what has been, so far, largely an Executive Branch failure to deliver on promises made to the American people—especially the people living within the foot prints of nuclear reactors. I have testified at the NRC about their efforts to streamline the regulatory process, which are admirable.⁶ But the reality is that the NRC is already doing what it can; even without streamlining of the regulatory process for decommissioned sites those sites

⁶ 2014. David G. Victor. Decommissioning at San Onofre: The Community Engagement Experience. Testimony to the Nuclear Regulatory Committee. For more information see <https://www.nrc.gov/reading-rm/doc-collections/commission/slides/2014/20140715/victor-20140715.pdf>

are finding ways to cope with NRC procedures through exemptions. What everyone is waiting for is enabling federal law.

Second, because of these delays—and skepticism about when they will be resolved—the nation’s nuclear sites are now gearing up to monitor and manage spent nuclear fuel casks in ways that were never intended. The original plan was that spent fuel would be removed from reactor cores, cooled in pools onsite, and then put into canisters and casks for brief local storage and expeditious removal. Because that last step in the chain has never happened, the canisters and cask systems are now aging in place. At the urging of the CEP, SCE has developed an extensive program for monitoring the casks and inspecting the canisters while they are on site.⁷ Recent legal challenges and settlements have reinforced that effort.⁸ We are fortunate in that other sites built dry cask systems before SONGS and we can learn from their aging management programs. To give you a sense of just how long the delays have extended, as of today several sites have seen the original 20 year NRC license for on-site dry cask storage run its course, with each getting a 40-year renewal. At the most recent CEP meeting we devoted the entire session to this topic.⁹

Third is transportation. There is an understandable tendency in Washington to do what can be done. This tendency has generated legislation that focuses on Yucca Mountain and brings CIS along. But we must focus, now, on the reality that all of these strategies will not work unless there are viable ways to move spent fuel from reactor sites to CIS and/or permanent repositories. The US Navy safely ships defense spent nuclear fuel and related materials around the country on a regular basis—thousands of shipments—using an effective and credible government planning system and emergency training for its routes. This system must be available to the DOE as it takes authority over spent nuclear fuel transportation. The NRC has procedures ready for use in this area (NUREG 0725). Safe transportation of spent commercial reactor fuel is not a technical problem, but it is one that needs careful administrative planning and political awareness.

A serious transportation plan would have several elements:

- A program for testing and building railroad cars for moving spent fuel casks. This is a DOE responsibility, and with current appropriations DOE will test a prototype rail car (along with other support cars) over the next 2 years. That’s good news, but there are

⁷ 2014. David G. Victor. Safety of long-term storage of spent nuclear fuels at SONGS. Report of the Chairman of the Community Engagement Panel of the SONGS. For more information see https://www.songscommunity.com/docs/LongTermStorageofSpentFuel_120914.pdf

⁸ 2017. Citizens Oversight, Inc. V. Southern California Edison. For more information see https://www.songscommunity.com/doc_library_settlement.asp

⁹ 2017. 3Q Meeting of the Community Engagement Panel. Oceanside, California. For more information see <http://www.songscommunity.com/091417CEPMeetingAgenda.pdf>

no appropriations to build a fleet of these cars as will be needed to move spent fuel expeditiously. Elsewhere I have outlined the state of play and costs, which are small.¹⁰

- The states and regions must get ready. When DOE was planning to move waste from the nuclear weapons sites—such as in Colorado and Washington—state and regional officials got organized to help plan routes, safety and procedures. The states where these sites were shipping nuclear materials had an incentive to make this work because they wanted the sites cleaned up. By contrast, very little to none of the necessary spadework for local, state and regional planning of spent fuel shipments has been done. There is legislation in California that would help.¹¹ The CEP has reached out to the California Energy Commission on this topic.¹² And the Western Governors Association could easily be tapped—as could regional state associations in other parts of the country. The problem is that nobody has believed that serious solutions for spent nuclear fuel would be forthcoming. Now that they are, the transportation planning processes must gear up—with a key role for the Federal government.

All the authority needed to fix this problem does not rest with Congress but many are looking to Congress for leadership and initiative in getting the process started. A good start would be to ensure that a title on transportation is included in NWPAA Amendments (inserted, presumably, in Conference), appropriations to build the needed railcar system are included in a timely way (probably starting next fiscal year), and the states are encouraged if not mandated to get organized. Under plausible yet optimistic scenarios, CIS facilities could be open in the early 2020s. Spent fuel at SONGS (and many other sites) would be ready for shipment then. It would be a pity if all the work done to open storage and permanent disposal facilities falters for lack of attention to transportation.

Final Words

In a large and diverse nation such as ours, there always seems to be a more pressing and urgent matter that captures political attention. Meanwhile, critical questions about the nuclear industry and its infrastructure remain unanswered for decades while leaving un-spent billions of dollars. Inaction has pushing these questions to future generations to answer.

These delays only succeed in creating distrust in the ability of government to find a workable solution, anger towards the plant operators and creates an impossible future for those communities that involuntarily host these sites. All we ask is that those who can act and make a difference, do so with all possible urgency.

¹⁰ David Victor, Tim Brown and Dan Stetson, “Participants in 12 June telephone call with DOE to discuss transportation of spent nuclear fuel,” 26 June 2017, see www.songscommunity.com

¹¹ 2017. Nuclear Waste Policy Amendments Act of 2017. For more information see <https://www.congress.gov/bill/115th-congress/house-bill/3053>

¹² Letter from David Victor, Tim Brown and Dan Stetson to Robert Weisenmiller, Chairman of the California Energy Commission, 12 December 2016. see www.songscommunity.com

A plan for smart removal of spent nuclear fuel from the nation's commercial reactors is now coming into focus. It will require new legislation and a new focus by the federal government, as well as the states and regional planning authorities.

I see three steps as essential. First, the political deal must be done that allows for consolidated interim storage, and that deal as far as I can tell centrally requires restarting the Yucca Mountain process. Yucca and CIS should be seen as complements to each other. Politically they are combined; economically and technically they are also combined because interim storage allows for a more rational long-term strategy that includes opening a permanent storage facility. Second, a fresh look at the priorities for removing spent fuel is needed. When options for sending the fuel become viable there will be much more fuel ready to move than the system can handle. We think decommissioned sites should be high in the queue. Third, a viable strategy for transportation is needed—a topic that has been orphaned by the lack of suitable places to send the fuel. Transportation requires some funds (small, mainly for rail cars and planning) and crucially that federal, state and other officials begin working together on strategies.

Daniel T. Stetson
Department of Energy Meeting
On Consent Based Siting Of Spent Nuclear Fuel
Sacramento, CA
April 26, 2016

I think it most poignant that we are holding this meeting on the 30th Anniversary of the Chernobyl disaster. It highlights the importance of what we we doing and the responsibilities that are on our shoulders to break through the spent nuclear fuel storage paralysis that has straight jacket this nation us since the 1950's. Good evening, my name is Dan Stetson and it is an honor for me to be here this evening. For the past two years I have served as Secretary for the Community Engagement Panel for the decommissioning of the San Onofre Nuclear Power Generating Station (SONGS).

The CEP is comprised of representatives from surrounding cities and counties, including elected officials and public servants, as well as representatives of the U.S. military, local environmental organizations, the business and labor communities, local law enforcement and local schools and academic institutions. We hold quarterly public meetings with along with workshops on pertinent topics. One of the primary goals of the CEP is to act as a liaison between the majority owner, Southern California Edison, and the general public during the decommissioning process.

While I am honored to be here in Sacramento, I along with many others are disappointed that this meeting is so far away from San Onofre, which is currently struggling with this issue. I do, however, want to thank you John Kotek and Andy Griffith for coming to our next Community Engagement Meeting on June 22nd. In fact, I invite everyone to attend that important meeting.

At our CEP meetings over the last two years I have witnessed vigorous discussions and debates around almost every element of the decommissioning process. This has included cask thickness, security, inspections, transportation, seismic activity, corrosion and more. The one point that everyone agrees upon is that everyone wants the spent nuclear fuel moved out of San Onofre to a safe storage facility as soon as possible.

Given that everyone around San Onofre wants it out, how can we - who have benefited from Carbon free electricity from SONGS for many years – impose – if that is the right word on another community the receipt of our nuclear waste. Having a spent nuclear fuel storage site in your community is viewed upon as tantamount to having a maximum security prison next door. No one wants a prison next door.

It goes without saying that the storage site must be safe for the local population and safe for the environment. The #1 responsibility of our government is the safety of its people!

Regardless of where we store the spent nuclear fuel, technology must catch up and advance beyond where it is now to the point where we have "Defense in Depth." This must include comprehensive inspections and contingency plans for every conceivable negative situation. Given human nature, we know that issues will arise and accidents may happen, just as they did at WIPP. As Mark Twain said, **"It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so."**

It is a given that we want the spent nuclear fuel in OUT San Onofre, no matter what. However, we can't be merely dumping our problem on an unsuspecting impoverished community that is under duress that does not have the wherewithal or resources to understand what they may be getting into. There must be a very strong value proposition to the receiving community. There must be clear quantifiable benefits – economic and otherwise to the entire community now and future generations. The benefits must be significant enough where the communities would stand in line or compete to host a site. These benefits could include financial payments, local hiring preferences, community infrastructure improvements, and so forth. Somehow this value proposition must stand the test of time and new political administrations that may have other ideas. Regretfully, trust is a big issue because in the past the rules of the game have changed over time.

After potential sites (both interim and long term) have been identified, I would suggest the next step is to engage the local community on the pros and cons of local storage, and the negotiation of the value proposition. I would suggest that a variation of the Community Engagement Panel Model would be a good vehicle to accomplish this. Hopefully, you can recruit a chairman as talented as Dr. David Victor. The panel must be carefully chosen and represent all segments of the local community. We know that we will have a strong voice from the nuclear community and a strong voice from the anti-nuclear community. However, the silent majority must also be engaged. One thing that I have noticed about our panel and those who come out to our meetings is the lack of socio economic diversity. We do not have the lower socio-economic portions of the population coming to the meetings. They need to have an advocate and a voice during the process.

The entire process must be conducted with transparency, honesty and accountability. In other words, to paraphrase a former president, "Trust, but Verify."

After the engagement process is completed, the voice of the local community as communicated through their elected officials must be heard and respected. They must be willing to support or at least accept a storage facility.

Finally, getting it to the storage site is a real concern. Transportation on our rail system needs to be better. We regularly hear of train derailments and accidents. No one wants railroad cars carrying spent nuclear fuel rumbling through their neighborhood for the foreseeable future. We need to have trust and confidence in the transportation casks and rail system. With approximately 100 nuclear sites and the possibility of only a few storage sites, we are going to have a spider web of railroad tracks to these sites. We can't start planning early enough to start working with the city, county and state officials along the intended routes. We should start with the 14 plants that are no longer operating.

These are all long term goals. The Blue Ribbon Commission estimates this process will take 15 to 20 years for a deep geological site to be identified, licensed and prepared; it would take 5 to 10 years for a consolidated storage facility. SCE tells us that if a site was ready today, it would take 10 years to move all the spent fuel out of San Onofre. So the earliest we could hope for removal is 15 to 20 years. We owe it to our children and their children to break this paralysis that has existed since the 1950's.

If not us, who?

If not now, when?

December 12, 2016



Dr. Robert B. Weisenmiller
Chair
California Energy Commission
1516 Ninth Street, MS-33
Sacramento, CA 95814

Dear Chair Weisenmiller,

Thank you for your ongoing efforts to represent the interests of the State of California in favor of smart management of the state's nuclear power plants and policies. We lead the Community Engagement Panel (CEP) for the San Onofre Nuclear Generating Station (SONGS), a volunteer panel set up to help steward the process of decommissioning at SONGS. By far, the topic that has attracted the most attention at CEP meetings is how to accelerate movement of the spent nuclear fuel out of our communities into new consolidated interim storage (CIS) facilities in New Mexico, Texas, and perhaps other states. **It is in that respect that we write today and offer to work with the CEC to help sharpen a California strategy for accelerating the safe movement of spent nuclear fuel out of the state.**

We in the CEP have already benefitted enormously from the work of the CEC. We learned much when Executive Director Rob Oglesby presented at a SONGS CEP meeting in January 2015. We have also been engaged with the Department of Energy (DOE) process regarding consent for interim storage of spent fuel—a process that CEC has helped to shepherd, such as with the DOE public meeting in April 2016 in Sacramento. We think it would be useful for the CEP and the CEC to work together more closely.

Many of us in the communities around San Onofre are encouraged by the political window of opportunity that is opening for CIS. In addition to the two proposed CIS facilities that are at various stages of licensing we note that legislation was introduced in the current session of Congress to make the necessary changes in federal law, and co-sponsorship of that legislation has grown. It is quite possible that the upcoming session of Congress may see passage of that legislation as part of a larger legislative reform that would address permanent spent fuel storage (Yucca Mountain) as well as interim storage. And while the Presidential transition has created many uncertainties, DOE and the Nuclear Regulatory Commission (NRC) have been doing a lot to prepare the ground for consolidated interim storage.

It strikes us that now is the time for the State of California to accelerate planning and coordination among the appropriate state agencies in order to ensure that we are prepared to safely move the spent fuel from here—at SONGS, Diablo Canyon, Humboldt Bay, and Rancho Seco—as soon as practical. A California strategy would need to focus on how to advance our state's interests in the federal legislative and administrative processes to make CIS a reality. It would need to address questions such as how to ensure spent fuel from decommissioning nuclear sites is "first in line" when CIS becomes available, and how to ready our state, county, and local administrative bodies to work together on crucial topics such as coordination of transportation routes and safety.

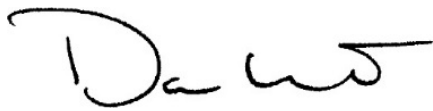
We understand that the CEC already participates in the California Nuclear Transport Working Group and, as such, coordinates with key parties such as the CHP, Cal OES, and California DPH. We appreciate that the CEC also is engaged with the Western Interstate Energy Board's High-Level Waste Committee, which offers another opportunity for the region to advance its interests. However, we are concerned that the state itself is not well enough organized to advance its interests in this debate, especially as the number of plants undergoing decommissioning in the U.S. is poised to rise—creating keen interest around the country in removing spent fuel from decommissioning sites. In the 2020s, when CIS could become available, all of the California nuclear reactors will be undergoing decommissioning—which puts our state in an almost unique position with distinct interest in making CIS a reality.

It is our hope that the CEC could help to focus and organize a statewide strategy on this important topic, and suggest ways the CEP can support such a strategy. We in the CEP have been working on many fronts—we attach a brief summary of our current strategy—but this question requires statewide and federal perspectives as well.

Those of us who serve on the San Onofre CEP would like to better understand the state-level strategy in advancing CIS while also preparing to manage the complexities of spent fuel transportation. On behalf of the CEP, we would appreciate the opportunity to discuss transportation planning with the appropriate representatives from the CEC.

We will follow-up via telephone to discuss the CEC's interest in such a discussion with the CEP or perhaps the undersigned CEP officers to start. In the meantime, thanks again for the important role you play on nuclear matters in California.

Sincerely,



David Victor
CEP Chair
Professor and Director, Laboratory on International Law & Regulation, UC San Diego



Tim Brown
CEP Vice Chair
City Council Member, San Clemente



Dan Stetson
CEP Secretary
Executive Director, Nicholas Endowment

Attachment: "San Onofre Community Engagement Panel Strategic Plan: Advocating for Federal Legislation to Enable Consolidated Interim Storage (CIS)"

cc: Members of the SONGS Community Engagement Panel
Mr. Robert P. Oglesby, California Energy Commission
Mr. Kevin Barker, Advisor, CEC
Mr. Justin Cochran, Nuclear Policy Advisor & Emergency Coordinator, CEC
Hon. Dianne Feinstein, U.S. Senator
Hon. Kamala Harris, U.S. Senator-elect
Mr. Bill Christiansen, District Director, Congressman Darrell Issa
Mr. Tom Palmisano, Vice President Decommissioning and Chief Nuclear Officer, SONGS
Mr. Manuel Camargo, Strategic Planning, SONGS
Concerned Coastal Communities Coalition

David G. Victor
Chairman, SONGS Community
Engagement Panel
[REDACTED]

11 September 2015

Board of Supervisors
County of San Diego
[REDACTED]

Re: Agenda Item for 15 September Board meeting: Advocating for the Removal and Relocation of Spent Nuclear Fuel from the San Diego Region

To the Board,

Thank you for the opportunity to comment on this agenda item. For the last 18 months I have served as Chairman of the Community Engagement Panel (CEP)—a group of 18 volunteers drawn from the many communities around the San Onofre nuclear plant. Convened by Southern California Edison, the CEP is designed to open a conduit between Edison and these communities—in part to help Edison make the local communities more aware of how the decommissioning at San Onofre will proceed and to also help Edison become better aware of the concerns and views of the communities. We are independent and advisory.

Most of the conversations at the CEP have focused on the same issue you are addressing next week. What will be done with the spent fuel? I write to share with you what we have learned about this question as it may have large implications for what the Board writes not only in the letter contemplated by this agenda item but future board actions as well.

Many people have been surprised and concerned that even as the plant is dismantled that the fuel will remain at the site within our communities for the indefinite future. The reasons for this stalemate are well explained in your agenda item. The Federal Government had planned to remove spent fuel from reactors and store it permanently at Yucca Mountain. For various reasons, the Yucca mountain option has been slow to materialize and may never become available. That strategy by the federal government never contemplated any alternatives. Without Yucca we are stuck with the spent fuel.

We in the CEP have also learned about an intriguing opportunity to get around the Yucca problem. Several private companies along with communities in other states are creating facilities for “consolidated interim storage (CIS).” The idea is to move

spent fuel from sites like San Onofre into a central location far from population centers and then store it there until a permanent repository becomes available.

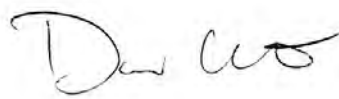
When you send your letter to the Department of Energy urging prompt relocation of the spent fuel it could be helpful to identify the need for DOE not just to focus on permanent repositories but also to offer its support to CIS. The Secretary of DOE has indicated his broad support for this option in part because DOE has large quantities of military nuclear waste that it must store. And there is an office inside DOE that is actively working in this area. But DOE would benefit from knowing about the growing local support for making CIS a reality. We have discussed this extensively at the CEP and the tenor of our conversations has been very supportive of CIS. The CEP is now canvassing a large number of other local groups to gauge their support as well.

Making CIS a reality may require changes in federal legislation to address topics such as funding—the nuclear industry has paid into a trust fund to cover the cost of storage, but there are ambiguities about how much (if any) of those funds can be used for CIS. It could be helpful to signal in your letter the need to look closely at legislative action. Frankly, Congress has not focused much on this topic and it would be helpful if California's delegation were more involved.

Finally, in the CEP we have discussed extensively the possible role for actions within the State of California. We have learned that CIS is a good idea in principle but that there are many important regulatory, political and financial details that remain to be worked out. For example, earlier efforts to create CIS facilities foundered on the lack of viable routes and strategies for transportation. Fixing that problem will require efforts not just at the federal level but also within the State and at the county level. We have learned that there could be an important role for the State of California to look at this range of topics and develop a strategy to help address them—so that CIS can become a reality. I attach a CEP memo that offers more detail on that issue, and in your letter it could be useful to indicate the need for the State to focus on this topic. Some members of the Assembly and Senate delegations from around San Onofre are aware of this issue, but across those legislative bodies awareness is still low.

I would welcome the opportunity to discuss these issues with you further and to offer any support where I or other members of the CEP can be helpful. I also look forward to working with the County as we try to make CIS a reality.

Yours Sincerely,

A handwritten signature in dark ink, appearing to read "Dan Cus". The signature is fluid and cursive, with a large initial "D" and a stylized "Cus".

Attachment: SONGS CEP Memo, 25 August

From: Terry Vollmer
Sent: Friday, February 25, 2022 1:27 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Terry Vollmer



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From: Theodore Voth
Sent: Friday, February 25, 2022 4:58 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

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Sincerely,
Theodore Voth



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From: Deborah Voves
Sent: Friday, February 25, 2022 1:41 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

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Sincerely,
Deborah Voves



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From: Chris at Action for Spent Fuel Solutions Now
Sent: Friday, March 4, 2022 11:09 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: Action for Spent Fuel Solutions Now RFI Response 030422.pdf

Please find attached our response to the RFI: Consent-Based Siting and Federal Interim Storage. We are pleased to submit our response and appreciate the opportunity to participate in this important conversation. We look forward to continuing to engage with you on this important matter.

Thanks.

Chris Wahl
Executive Director
Action for Spent Fuel Solutions Now

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Use caution if this message contains attachments, links or requests for information.

To: consentbasedsiting@hq.doe.gov
From: Action for Spent Fuel Solutions Now
Date: March 4, 2022
Subject: RFI: Consent-Based Siting and Federal Interim Storage

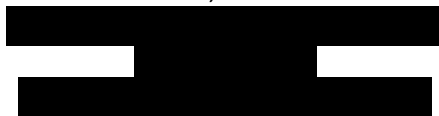
To Whom it May Concern:

Action for Spent Fuel Solutions Now (ASFSN) is a new coalition of local governments, elected officials, utilities, environmental groups, labor leaders, Native American leaders, business organizations and other community members who support the relocation of spent nuclear fuel to a federally licensed facility. Our founding members include representatives from the County of Orange, County of San Diego, City of Riverside, Southern California Edison (SCE) and San Diego Gas & Electric (SDG&E).

Our coalition applauds the recently released *Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities* as an important step in restarting the federal spent fuel management program. The disposition of spent fuel is more of a socio-political issue than a technical challenge. We appreciate the Department of Energy's (DOE) efforts to incorporate social science into the process to find solutions for our nation's spent nuclear fuel, and we are thankful for the opportunity to provide a response to the RFI. We also support any future efforts the DOE may undertake to implement a robust consent-based siting process.

The following summarizes our input on consent-based siting for consolidated interim storage (CIS), which is rooted in international best practices for achieving informed consent and a commitment to stakeholder engagement, equity, and long-term community partnerships. In addition, please find below the information about our organization requested in the RFI:

Action for Spent Fuel Solutions Now
Attn: Chris Wahl, Executive Director



Thank you again for the opportunity to comment on your consent-based siting process. We look forward to continued progress at the national level as we work together to find storage – and disposal – solutions for spent nuclear fuel.

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

Advocating for equity-informed, best practice-based criteria for confirming community consent is among ASFSN's core values. As a result, we strongly support an approach that prioritizes stakeholder engagement, social equity and environmental justice. A transparent and successful consent-based

process must first seek to educate stakeholders in prospective host communities about spent nuclear fuel, including potential safety and environmental risks, as well as the measures taken to ensure safety during both construction and operation of a consolidated interim storage facility. This foundation of knowledge is critical to addressing any concerns and obtaining informed consent as the process unfolds.

Ensuring community members fully understand the science, risks and potential benefits of hosting a spent nuclear fuel storage facility requires a thoughtful approach to outreach and education. We believe the DOE's efforts should accomplish the following:

- **Engage a broad range of stakeholders within potential host communities.** Local governments and other community leaders will undoubtedly play a critical role in a consent-based siting process. However, equity and social/environmental justice considerations require an approach that prioritizes dialogue with disadvantaged communities and other hard-to-reach audiences. These stakeholders may ultimately bear the risks of any adverse effects associated with spent nuclear fuel storage and, as a result, must fully understand the potential hazards and have the opportunity to address any concerns. To establish an ongoing conversation, the DOE and its representatives must work to build trust, demonstrate a commitment to transparency, and use face-to-face, grassroots-oriented tactics that educate while also making community members feel like true partners in the process.
- **Maintain consistent engagement that begins early and continues until host communities are comfortable.** International case studies suggest that true, informed consent can only be achieved after an extended engagement process during which the siting authority builds a long-term partnership with individual potential host communities. We believe a consent-based siting process in the United States should adhere to this best practice by following an adaptive, phased approach and acknowledging that community consent occurs as the culmination of an ongoing two-way conversation that takes place over the course of time. Before making a final decision, the stakeholders most affected must have ample opportunities to learn about spent nuclear fuel storage and its risks, ask questions, provide input on matters of interest, discuss incentives, and collaboratively identify fair and equitable solutions.
- **Communicate consistently through a wide range of channels to reach diverse communities.** In any community, stakeholders prefer different modes of communication. Some individuals may also face challenges due to unreliable Internet access, lack of a permanent address and other barriers to participation. Tribal nations and other stakeholders may also have cultural preferences and language barriers. A successful outreach program, therefore, relies on a wide variety of communications designed to reach every stakeholder in their preferred manner. Specific tactics could include, but are not limited to, conducting in-person outreach at homes, community events and other easily accessible locations; disseminating messages through traditional media and digital platforms, as well as non-traditional means such as school and church newsletters; distributing direct mail pieces; and holding meetings at multiple times during the day to accommodate work schedules and childcare needs. Information about opportunities to engage in the discussion should also be widely publicized to maximize participation.

- **Use accessible language that doesn't rely on technical jargon.** Spent nuclear fuel – and the implications of storing it in one's community – is a highly complicated topic for those outside the industry. Effectively educating the public on this issue so they are able to meaningfully participate in the process requires simple messaging free of technical language that can be readily understood by a wide variety of stakeholders. Information should also be introduced in easily digestible amounts over time – phase by phase – both to ensure understanding and prevent the public from becoming overwhelmed.
- **Translate all materials and utilize bilingual outreach representatives.** In order to fully understand the issues and participate in the discussion, stakeholders must be given the opportunity to engage using the language with which they feel most comfortable. It is our understanding that the DOE intends to translate materials into a range of languages, and we strongly support this approach. Outreach representatives conducting face-to-face interactions must likewise be able to converse fluently in these languages and, ideally, connect on a cultural basis.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Consent must ultimately come from all members of host communities – including tribal, state and local governments – at the end of a lengthy education and engagement process. We anticipate local leaders will play a more in-depth role in the consent-based siting process. This role should be broad and clearly defined at the outset. It should also include ample opportunities to help identify risk mitigations, benefits and incentives for their communities, as well as the ability to exercise authority and provide oversight where possible within the broader regulatory framework.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

This question is best answered by the communities, tribal nations, and states in the vicinity of potential sites for interim storage facilities. However, the DOE should be open to a range of incentives for potential host communities. Specific benefits cannot be identified until these communities (and the tribal, state and local governments that represent them) have provided their input. We expect the benefits will vary across different communities based on local priorities. Some potential incentives may include financial and economic benefits such as jobs, training and community investment to mitigate any risks and costs associated with hosting a spent fuel storage facility. Other opportunities could focus on investments in social, cultural and economic prosperity, as envisioned by community members.

It is also appropriate and necessary to provide financial support and other resources such as access to technical experts as they conduct their own investigation in tandem with the DOE's ongoing dialogue.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

Several challenges related to public education and outreach are summarized in our response to Question 1 above, along with a suggested course of action to overcome them. In short, we believe the DOE must make it easy for all stakeholders to understand the issues, participate in engagement opportunities and, if applicable, provide their consent at the end of the process.

Successfully siting a consolidated interim storage facility will also require greater stability and consistency at the national level. To that end, the DOE and decision-makers in Congress might consider creating a new autonomous waste management organization with reliable funding in the longer term. This approach, while challenging, is grounded in international best practices and will likely help achieve the ultimate goal of finding federal solutions for our nation's spent nuclear fuel.

Finally, we can foresee cases where local stakeholders interested in exploring CIS face potential state government opposition. To address this, we suggest that the DOE conduct proactive outreach to state governments about the department's consent-based siting efforts and develop a program to facilitate local, state and federal dialogue. DOE's experience and expertise make the department uniquely qualified to offer insights to local and state leaders to facilitate informed decisions whether to consider exploring a federally licensed CIS.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

We believe interim storage sites should not become permanent by default due to the absence of a disposal solution. Providing potential host communities with a reasonable expectation about the duration of storage will require demonstrated progress toward a repository concurrent with the consent-based process for consolidated interim storage or, at minimum, a continued link between a repository and interim storage as established in current law. To help expedite solutions for spent nuclear fuel, however, we also support Congressional action to modify the link between CIS construction and construction authorization for a repository.

7. What other issues, including those raised in the Draft Consent-Based Siting Process, should the Department consider in implementing a consent-based siting process?

We would suggest an adaptive phased management approach to consolidated interim storage, which is consistent with long-term management best practices adopted by other countries with spent fuel management programs, including Finland, Sweden, Canada and others. History tells us that the spent fuel landscape changes over time. It is impractical to map out in detail every step on the path to solutions for interim storage and permanent disposal. Instead, adaptive phased management allows for flexibility in the pace and manner of implementation. It accounts for sustained stakeholder engagement along with the incorporation of new knowledge throughout the process, such that the DOE can check and adjust at the end of each phase before moving on to the next one.

Spent fuel from shutdown plants, such as the San Onofre Nuclear Generating Station (SONGS), should also be prioritized for removal over operating plants that continue to generate nuclear waste.

Area 2: Removing Barriers to Meaningful Participation

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Our input on barriers to meaningful participation; necessary resources such as financial support and technical and legal expertise; and engagement with tribal, state and local governments is summarized in our responses to Area 1. However, our general feedback on Question 5 is as follows. In addition to establishing a low bar for participation, the DOE must work to ensure the process is fair and transparent. Public education efforts should also include discussions on issues such as transportation and emergency planning, as well as the duration of storage and timing for a permanent geologic repository. Finally, as the department embarks on a consent-based process, it is important to recognize that unanimous consent may not be possible. The process should, therefore, seek to build understanding and establish a meaningful dialogue with those most affected.

Area 3: Interim Storage as Part of a Waste Management System

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

As noted above, we would like to see the DOE focus on interim storage over the next several years while promptly restarting work in pursuit of a repository. Due to the challenges inherent in siting a permanent repository, current law is likely to impede progress on interim storage construction when the consent-based process is complete. The DOE must, therefore, determine what changes to the Nuclear Waste Policy Act are needed (and when) to modify the link between CIS construction and construction authorization for a permanent repository, and then build support. This approach will allow interim storage to move forward while providing more certainty for host communities about the timing of a repository.

We recommend that DOE establish a working group to collaborate on changes needed to federal law. Action for Spent Fuel Solutions Now stands ready to support such an effort to explore authorizing language and appropriations needed to advance the broader waste management system here in the U.S. Our coalition also is well positioned to advocate for passage of such a legislative package.

From: Kevin Dill
Sent: Thursday, March 3, 2022 2:27 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: UA Repsonse to DOE Nuclear Waste Siting RFI-3-3-22 - FINAL.pdf

On behalf of the United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States and Canada, AFL-CIO ("UA"), please see attached for the UA's response to the Department of Energy's RFI on using a consent-based siting process to identify federal interim storage facilities for nuclear waste.

Please let me know if there are any issues with this attachment.

Kevin Dill



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March 3, 2022

VIA ELECTRONIC MAIL (consentbasedsiting@hq.doe.gov)

U.S. Department of Energy
Office of Nuclear Energy
Office of Spent Fuel and Waste Disposition
1000 Independence Ave. SW
Washington, D.C. 20585

Re: UA Comments on Consent-Based Siting and Federal Interim Storage RFI

Dear Sir or Madam:

These comments are being submitted on behalf of the United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States and Canada, AFL-CIO (“UA” or “United Association”) in response to the U.S. Department of Energy’s (“DOE”) recent Request for Information (“RFI”) regarding the consent-based siting process the DOE is developing for temporary federal facilities that will be used to store spent nuclear fuel and high-level radioactive waste.¹

The UA represents over 359,000 skilled craftspeople in the plumbing and pipe fitting trades and is a leading international labor union in the nuclear energy sector. These comments offer the UA’s perspective on important issues implicated by this RFI, including the benefits and opportunities temporary storage facilities can offer to local communities and the importance of using the most skilled and qualified workforce possible when constructing these facilities.

The specific questions in this RFI to which the United Association is responding are identified below.

1. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

Before engaging with local, State, and Tribal governments as part of the consent-based siting process for nuclear waste facilities, the DOE should estimate and carefully consider the employment opportunities these facilities will create and the economic stimulus they will directly

¹ Notice of Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Fed. Reg. 68,244 (Dec. 1, 2021).

and indirectly bring to local communities. The jobs that will be created by these storage facilities are expected to be good-paying jobs capable of supporting a middle-class lifestyle. For example, U.S. Department of Labor statistics show that workers employed in “hazardous materials removal” typically earn an hourly wage well above federal and State minimum wages and are generally not required to have a college degree. Moreover, workers at these facilities are likely to receive significant training through apprenticeship programs or other on-the-job learning, allowing them to further hone and develop their craft skills.²

In short, many of the jobs that will be created by nuclear waste storage facilities are middle-class jobs that do not require a college degree—the exact type of jobs that are badly needed today in many communities. Therefore, *before* approaching local, State, and Tribal governments to discuss siting possibilities for these facilities, the DOE should carefully research and estimate the jobs impact and economic benefits that will result from their construction and operation. If the DOE is unable to specifically identify and articulate these benefits when engaging with local communities, State politicians, and Tribal leaders, it is unlikely those groups will ever see a reason to consent to the construction of these facilities in their communities.

2. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

The DOE should strongly consider reaching out to State and local Building Trades offices when engaging in a consent-based approach to project siting. The hardworking union members represented by these Building Trades offices are ready, willing, and able to assist with the construction and operation of nuclear waste storage facilities. These Building Trades offices can therefore be a valuable ally when the DOE approaches local communities to discuss the economic benefits that will result from the construction and siting of these facilities.

Partnering with Building Trades offices and Local Union affiliates when engaging in a consent-based approach to siting may also help to alleviate the safety-related concerns some may have regarding the storage of nuclear waste in their communities. Studies routinely show that the use of union labor on construction projects leads to safer worksites and better project outcomes.³ Those results are in no small part due to the best-in-class apprenticeship training programs offered by the UA and other Building Trades unions.

There should be no doubt regarding the overriding importance of safety and health concerns when constructing these storage facilities. When it comes to nuclear safety, there is no room for second chances or cutting corners. Partnering with the safest and most skilled construction workforce in the country—union labor represented by the UA and other Building Trades unions—could therefore go a long way towards responding to the safety concerns these facilities may generate.

² See U.S. BUREAU OF LABOR STATISTICS, *Occupational Outlook Handbook: Hazardous Materials Removal Workers* (last updated Sep. 8, 2021), <https://www.bls.gov/ooh/construction-and-extraction/hazardous-materials-removal-workers.htm>.

³ See *Study: Unionized Construction Offers Better Health, Safety Outcomes*, CONTRACTOR MAG. (Nov. 30, 2021), <https://www.contractormag.com/construction-data/article/21182462/study-unionized-construction-offers-better-health-safety-outcomes>.

3. *To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?*

The UA appreciates that the protracted failure of the United States to establish a permanent repository for nuclear waste has led the DOE to seek temporary solutions. However, the United Association strongly urges the DOE not to allow these interim efforts to distract from the pressing need to establish a permanent repository. Nuclear energy is dispatchable, produces zero greenhouse gas emissions, and can serve as a backstop to the intermittent supply provided by other clean sources of energy (such as wind and solar).⁴ The next generation of advanced nuclear reactors are therefore poised to play a critical role in achieving President Biden’s clean energy agenda. As such, it is imperative that DOE continue to work on a permanent solution for safely storing spent nuclear fuel and that the agency apply any and all insights gathered from this process to its efforts to establish a permanent facility.

The United Association thanks the Department of Energy for this opportunity to present its perspective on the important issues raised by this RFI. We are quickly approaching the 40th anniversary of enactment of the Nuclear Waste Policy Act,⁵ which was intended to establish a timely process for establishing a permanent repository for nuclear waste. In light of the clear—and growing—importance of nuclear energy to meeting our country’s energy goals, it is vital that DOE continue to pursue the establishment of a permanent repository for spent nuclear fuel.

Sincerely,

/s/ Gerard M. Waites

Gerard M. Waites

Kevin Dill

O'DONOGHUE & O'DONOGHUE LLP

⁴ See NUCLEAR ENERGY INST., *The Advantages of Nuclear Energy* (last visited Feb. 23, 2022), <https://www.nei.org/advantages>.

⁵ 42 U.S.C. § 10101 *et. seq.*

From: Kale Walker
Sent: Friday, March 4, 2022 2:00 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

“How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?”

This question is asked as if the nation is just starting now to develop a nuclear waste management system. It neglects to acknowledge the serious and consequential convergence of problems with past legislative actions, current waste containment issues, and the unlikely possibility of permanent ‘disposal’ any time in the foreseeable future. This RFI is a distraction from the urgent issue – The Canister Problem - and wastes more tax payer dollars.

The following must be acknowledged and incorporated into any informed discussion or “consent”:

The nation’s waste management system AND PROBLEM started decades ago when congress was led to believe that a permanent repository was a viable solution. Congress legislated that the DOE take the waste to a permanent repository without technical justification that it was a viable plan. Many decades and billions of dollars later, we are no closer to a repository; according to the NWTRB, even short term technical problems are not resolved. Congress gave the DOE a technically unfeasible mandate to meet. To continue to claim that the waste can be permanently disposed, is to continue to promote the Magic Mountain myth.

The DOE claims that the waste is safely stored in spite of their own 2019 Technology Gap Report that lists numerous critical, unresolved, short-term safety problems with the spent fuel storage canisters.

Table ES-1. List of Highest Priority Gaps

Gap	2019 Priority	2017 Priority	2012 Priority	Comments
Thermal Profiles	1	1	1	No change in priority
Stress Profiles	1	1	1	No change in priority
Drying Issues	2	2	6	No change in priority
Monitoring - External	3	3	2	No change in priority
Welded Canister – Atmospheric Corrosion	1	3	2	Change in priority due to near-term need to acquire stress corrosion cracking (SCC) data
Cladding – H ₂ Effects: Hydride Reorientation and Embrittlement	3	3	7	No change in priority
Consequence Assessment of Canister Failure	3	N/A	N/A	New gap to assess radiological risk due to loss of confinement caused by SCC
Fuel Transfer Options	3	4	3	Change in priority due to need for data for surface storage facility design

<https://www.osti.gov/servlets/purl/1592862>

Meanwhile, the NRC continues to approve canisters that do not meet the Monitored Retrievable requirements of the NWPA. The DOE acknowledges this in the disclaimer they present before any discussion about spent fuel waste management.



Nuclear Energy

This is a technical presentation that does not take into account the contractual limitations under the Standard Contract. Under the provisions of the Standard Contract, DOE does not consider spent fuel in canisters to be an acceptable waste form, absent a mutually agreed to contract modification. To ensure the ability to transfer the spent fuel to the government under the Standard Contract, the individual spent fuel assemblies must be retrievable for packaging into a DOE-supplied transportation cask.

Instead of acknowledging that the waste is stored in unsafe thin containers that crack, with no way to prevent or stop radioactive leaks or explosions, the DOE has embarked on this RFI.

To avoid radiological leaks or explosions, canisters must be replaced with casks that meet basic safety requirements. The casks must be stored in hardened buildings away from coastal hazard risks. And a multi-generational Rolling Stewardship plan and budget for long term surface storage must be put in place.

Today, March 4, 2022, the deadline for public comments on this DOE RFI, news of military actions around Ukrainian nuclear facilities causes many of us to realize the public is often not given 'the whole story'. In 1986, the Ukrainian government's and regulatory agencies' response to the Chernobyl disaster included misleading the public by intentionally withholding serious and consequential information from the public.

Unfortunately, intentionally or not, the RFI under consideration ignores important information and thus misleads both the public and congress into thinking this RFI is helping to solve the nuclear waste problem.

Kalene Walker

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From: Seaver Wang
Sent: Monday, March 7, 2022 4:11 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: The Breakthrough Institute - Siting RFI Final.pdf; The Breakthrough Institute - Siting RFI Cover Letter.pdf

Dear Ms. Trunzo,

Please find attached a response from the Breakthrough Institute to the U.S. Department of Energy's Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities.

Please do not hesitate to contact me or my colleague Dr. Adam Stein [REDACTED] with any questions.

All the best,
Seaver

--

Seaver Wang, Ph.D. (he/him)
Associate Director for Asia, Climate and Energy
The Breakthrough Institute
[REDACTED]

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Breakthrough Institute Response - Notice of Request for Information (RFI) on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities; Docket Number - 2021-25724

For the Breakthrough Institute, please contact Adam Stein (Associate Director for Nuclear Innovation, Climate and Energy - [REDACTED]) or Seaver Wang (Associate Director for Asia, Climate and Energy - [REDACTED]).

Breakthrough Institute Response to the Department of Energy Request for Information: Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities

Area 1: Consent-Based Siting Process

(Question 1) How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

In designing an equitable and just consent-based siting process, it is critical that the Department of Energy also consider the importance of promoting equitable access to the potential economic, infrastructure, and community benefits associated with selection of the site of a storage facility. All communities should be ensured equal access to the opportunity to bid to host a facility. To achieve this goal, the Department should undertake strong, proactive efforts to promote nationwide awareness of the consent-based siting process so that interested communities can adequately prepare to participate. The Department should also work to ensure that the siting process is broadly accessible to communities across America that may face diverse barriers to participation, including language barriers, lack of broadband internet infrastructure, timing of public meetings and hearings during the workday, and so forth.

Additionally, the Department of Energy should promote procedural justice in the design of the assessment process. A good consent-based siting process should not be excessively prolonged or burdensome and should avoid increasing the costs of participation by disadvantaged communities.

The consent-based siting process should also consider the broader climate and environmental justice benefits of spent fuel and waste storage facilities given their connection to a clean nuclear power and energy landscape.

The Department of Energy, the U.S. Nuclear Regulatory Commission, and other Federal agencies participating in the siting process should utilize standardized, evidence-based criteria to assess potential health, climate, labor, and environmental impacts. The reasonable boundary for risk should be a statistically measurable impact on workers, the nearby population, or the environment in the event of an accident. Concerns and impacts associated with siting should be compared against those that would be associated with alternative energy-related projects, such as comparable fossil fuel or other clean energy

infrastructure, accounting for the full life cycle. Unless a strong evidence-based argument can be made for a unique requirement, the standards for assessing community and environmental impacts of an interim storage facility should be comparable to the standards used to evaluate the impact of other infrastructure projects of similar scale, such as a wastewater treatment facility or National Guard armory.

Selected sites should take care to develop clear agreement terms with communities that incorporate long-term planning and include mechanisms for periodic assessment and re-evaluation of compliance with those terms.

(Question 2) What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Community consent is an idea and standard that is best served by democratic processes and community engagement at the local and Tribal levels. A consent-based siting process should in fact seek to minimize involvement from the State other than what may be required by state laws.

(Question 3) What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify Federal interim storage Sites?

Ensuring the availability of some funding via competitive grants that communities and localities can leverage to conduct site suitability evaluations on their own behalf may promote wider and more enthusiastic engagement with the Department as it seeks to identify candidate sites.

(Question 5) How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at Federal interim storage facilities?

The Department should establish upfront definitions with communities regarding the types of spent fuel or waste to be stored, the expected time horizon implied by interim or temporary storage, and the categories of activities (research, reprocessing, fabrication of new fuel products, etc...) that will be conducted at the facility, and other considerations. As part of the siting and engagement process, it will be key for the Department to communicate clear facts and basic information regarding spent fuel or high-level waste, timelines for storage, the regularity of storage site reviews and audits, anticipated timelines for facility construction, projected plans for spent fuel and waste transportation to and from the facility, and so forth. All parties should transparently and comprehensively communicate expectations upfront with both short-term and long-term considerations in mind.

We point out that it will be useful for the Department to show willingness to discuss the benefits of a facility in addition to communicating risks, so that local stakeholders have an accurate perception of how the site may benefit their communities without overestimating or underestimating the positive aspects of selection.

We note that uncertainty related to how consent for storage could be given and potentially taken away at a random point in the future could make the entire framework of consent-based siting untenable. We recommend that removal of consent should require measurable or observable evidence of some

exceedance of the siting agreement or failure to meet obligations on the part of the responsible facility (e.g. exposure beyond the bounds of acceptable limits outlined in the license approval, operations outside the scope of those proposed in the license, failure to observe terms of agreement, etc...)

(Question 6) What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

We recommend that the Department consult peer organizations and institutions in other countries that are similarly responsible for developing consent-based siting approaches, including but not limited to:

- Posiva Oy and the Radiation and Nuclear Safety Authority in Finland
- The Swedish Nuclear Fuel and Waste Management Company (Svensk Kärnbränslehantering Aktiebolag, abbreviated SKB) in Sweden
- The Nuclear Waste Management Organization (NUMO) in Japan
- The Nuclear Decommissioning Authority in the United Kingdom
- Électricité de France S.A. and the Agence nationale pour la gestion des déchets radioactifs (ANDRA) in France
- National Cooperative for the Disposal of Radioactive Waste (Nagra) in Switzerland
- The Nuclear Waste Management Organization in Canada

We also recommend that the Department consult existing enterprises in the nuclear industry, advanced nuclear reactor vendors, and nuclear utilities and operators to collect input from a breadth of related industry stakeholders regarding the optimal design of a siting process for storage facilities.

Non-governmental associations such as industry associations, policy organizations, and think tanks develop research, analytical, and educational products that are relevant to conducting accurate and up-to-date assessments on best practices for management of spent fuel. Such organizations also act as vehicles to educate lawmakers, policymakers, officials, and the public on issues of relevance to the nuclear fuel cycle. The Breakthrough Institute would be pleased to serve in the ultimate goal of supporting the development of a consent-based approach to siting storage facilities for spent fuel, and would enthusiastically explore partnership opportunities with the Department as it works to formulate its approach. For the Breakthrough Institute, please contact Adam Stein (Associate Director Nuclear Innovation, Climate and Energy - [REDACTED]).

(Question 7) What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent based siting process?

The 2017 Draft Consent-Based Siting Process document mentioned above is a good basis for a consent-based siting process, and has parallels with similar processes in other countries.

One additional issue the Breakthrough Institute would stress as valuable in the design of a robust consent-based siting process is the importance of timeliness. An overly lengthy, resource-intensive, or burdensome siting and review process disproportionately impacts marginalized and/or low-income

communities for which participation presents additional barriers and often involves further costs. Long timelines for the siting process may also lead communities to forego participation entirely, excluding them from potential benefits that would come with hosting a facility.

Area 2: Removing Barriers to Meaningful Participation

(Question 1) What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

Access impediments could present significant barriers to meaningful participation and to the ability of a community to provide informed consent. Such access barriers include but are not limited to technological barriers (broadband internet, phone lines, cellular infrastructure), language barriers, and participatory barriers (time commitments, burdensome bureaucratic expectations, limited knowledge, lack of clear directions or guidance). Advance awareness of the selection process and its constituent stages and components is key for ensuring meaningful participation.

Clear definitions of “community,” “consent,” and other terms will be critical for identifying and limiting the appropriate stakeholders to include in the process. This can provide clarity to stakeholders that might not understand if they could or should participate. Clarity can also reduce involvement of out-of-scope stakeholders that could create additional barriers and unfair impacts to local stakeholders and communities participating in the selection process.

(Question 2) What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

Services made available through the Department of Energy to assist communities in contracting experts can greatly aid the consent-based siting process, and are similar to several Federal grant programs for strengthening community support for local projects.

The Department should hold regular public meetings, both virtually and in-person locally, and organize multiple collections of public comments to give community members ample opportunity to participate in the siting process, ask questions, and provide input.

(Question 3) How could the Department maximize opportunities for mutual learning and collaboration with potentially interested communities?

The Department should create a plain language FAQ that can be distributed online and in print at in-person meetings that answers common questions regarding the objectives and criteria of the consent-based siting process, the nature of waste storage, the potential benefits and drawbacks of hosting a facility, the opportunities for participating in the siting process, and other common concerns articulated by communities based on the Nuclear Regulatory Commission’s prior experience managing on-site spent fuel storage at nuclear facilities.

The Department should regularly assess lessons learned after engagements with the public in order to rapidly identify and act upon areas for improvement.

The Department should provide a service in which experts can receive and answer questions from the public and interested stakeholders. This resolves potential information gaps in both directions, as it can be difficult, particularly for experts in a field, to have an understanding of what the general public might not already know. Over the long term, this process can enhance the Department's ability to learn from the public and improve its own approaches to public engagement.

Area 3: Interim Storage as Part of a Waste Management System

(Question 2) What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

Co-locating multiple facilities in the waste management system and co-locating waste management facilities with fuel manufacturing or other value-added activities provides greater employment potential and increases economic activity and local tax revenue. Communities may also be more likely to accept additional facilities after some duration following the establishment of the first facility, providing that the initial experience has been positive.

Co-location of waste management facilities alongside manufacturing and Research & Development facilities can also promote greater efficiency in the nuclear fuel cycle, facilitating recycling of spent fuel or reprocessing of waste. Co-location may also aid research and development efforts, the production of medical radioisotopes and other helpful products, and permit more frequent and robust monitoring of waste storage, while somewhat reducing the need to transport nuclear materials.

(Question 3) To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

We recommend that proposed interim storage facilities that are consent-based and accepted by the community, consider social equity and environmental justice, and have the potential to be expanded or converted to a permanent repository in the future should be prioritized in the siting process. At the same time, the planning or development of an interim storage facility should not be contingent on progress or lack thereof towards a permanent spent fuel repository.

March 07, 2022

Cover Letter

Breakthrough Institute Response to the Department of Energy Request for Information: Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities

RFI Title and Docket Number

Request for Information: Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities
2021-25724

DOE Contact

Alisa Trunzo
Office of Nuclear Energy
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585
[REDACTED]
consentbasedsiting@hq.doe.gov

Organization

The Breakthrough Institute

Contact Name, Address, Phone Number, and E-mail Address

Adam Stein
Associate Director for Nuclear Innovation, The Breakthrough Institute

[REDACTED]

Seaver Wang

Associate Director for Asia, Climate and Energy, The Breakthrough Institute

[REDACTED]

From: Laura Watchempino
Sent: Friday, March 4, 2022 10:09 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: DOE Consent-based Siting RFI.docx

My comments to DOE's RFI are attached and are intended to replace the comments I sent earlier today.

Thank you,
L. Watchempino

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March 4, 2022

Email: consentbasedsiting@hq.doe.gov

Subject: DOE RFI: Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, Document Number 2021-25724, December 1, 2021

The Impasse

There are about 95 power plants operating in 29 states, currently, generating 2,900 metric tons a year. And, there are 38 reactors in 30 states in various stages of decommissioning. While the [Nuclear Waste Policy Act of 1982](#) makes the management and permanent disposal of commercial spent nuclear fuel a federal responsibility, the DOE is nearly a quarter-century behind in accepting waste from commercial reactors.

The Government Accountability Office's (GAO) recently issued report in September 2021 [Commercial Spent Nuclear Fuel: Congressional Action Needed to Break Impasse and Develop a Permanent Disposal Solution](#) which recommended moving approximately 86,000 metric tons of nuclear fission waste now stored at nuclear reactor sites around the country to places where local and state officials would agree to accept it. The highly irradiated waste is stored in aging steel casks next to the nuclear reactor sites where it is exposed to the elements, as well as the vagaries of climate change and more intense weather occurrences.

Although the GAO report cited the extremely dangerous characteristics of nuclear fission waste and the need for permanent safe disposal, only Yucca Mountain in Nevada has been considered for the permanent disposal of the waste.

The Nuclear Regulatory Commission's Atomic Safety and Licensing Board, however, has determined that additional amendments to the Nuclear Waste Policy Act are not needed to license new temporary storage facilities. The Board's position negates Congress' seminal intent to designate one final resting place to safely isolate the nation's spent nuclear fuel from people and the environment.

In spite of the confusion created by the Board's obscure logic, the Government Accountability Office report nevertheless recommended:

"Congress should consider amending the 1982 Nuclear Waste Policy Act (NWPA) to authorize a new consent-based process for siting, developing, and constructing consolidated interim storage AND permanent repository facilities for commercial spent nuclear fuel." (*emphasis added*)

The detour from a single permanent destination for this lethal waste to an unspecified number of interim storage sites around the country will only amplify radioactive exposure pathways for innumerable population centers and residents along railways and other transport routes as volatile nuclear fission waste is moved and removed from facilities throughout the United States for another century. The waste could also become stranded at interim storage facilities as the spent fuel packages degrade and become too dangerous to move.

While host communities at nuclear reactor sites may not have consented to storing the waste produced by nuclear fission, they did agree to host the reactors and have received the benefits of nuclear energy for decades.

Environmental Justice

The vast majority of municipalities and neighborhoods situated next to the country's major transportation corridors and ports are impoverished communities of color that have historically been subjected to highly polluting industrial hubs located along these corridors. These low-income communities generally lack the resources to move away from the multiple pollution sources and nuisance conditions that threaten their health and well-being 365 days a year. They are essentially held captive to a lifetime of environmental injustices.

These are the very Environmental Justice, or EJ communities, that DOE is targeting for consent-based siting, with monetary incentives and the ever-ready enticement of dangerous jobs that DOE hopes will secure their consent to sacrifice the remainder of their lives next to one of these radioactive hot spots that the rest of the nation wants to be rid of.

With no end date in sight, temporary Interim Storage Facilities could well become de facto permanent storage centers for this perpetually dangerous waste, as the NRC renews temporary storage site licenses again and again to accommodate the ever-growing volumes of nuclear fuel waste from new, operating, and decommissioned nuclear reactor sites. Interim Storage Facility expansions will be required to accommodate the constant waste streams from these activities, but will the continually exposed host communities and populations along the transportation corridors have any say in the matter as radiation doses bioaccumulate in their bodies and become lethal? Or as thin-wall transport canisters degrade, exposing the cracked and corroded inner casks encapsulating the nuclear fission materials?

Or will DOE turn their backs on these doomed communities, just as it has with EJ communities living next to permanent disposal sites, containing mountains of legacy uranium mine and mill waste. Members of these EJ communities once worked in the uranium mines and mills that produced the raw fuel for nuclear weapons and nuclear reactors, though they never consented to sacrifice their environments, or their health and well-being when the mining jobs were offered. Worse, they were never informed how their daily exposure to radon releases in the mine shafts, mine pits, and waste piles would bioaccumulate in their bodies, endangering their health and decimating their homelands and communities. New Mexico was a uranium mining state that supplied material for America's nuclear weapons arsenal. Uranium workers employed before 1971 who have since developed radiation-related illnesses and their surviving family members deserve to be compensated by the federal government, as well as the communities who continue to live with the environmental pollution and degradation caused by unbridled uranium extraction.

DOE now proposes to deepen the deception by pretending that the interim storage of nuclear fission material is safe, and promising communities that the interim storage is only temporary. These untruths negate the informed consent that should form the basis for consent-based siting of interim storage facilities.

Permanent Isolation of Nuclear Fission Waste

DOE's ill-advised detours from the national goal of safely isolating commercial nuclear fission waste in a single deep geologic repository will expose a growing sector of the nation's population centers to nuclear fission byproducts as the poorly packaged byproducts are transported through neighborhoods and along public transport corridors. New Interim Storage

Facilities, will be exposed to the elements and subjected to extreme weather conditions above ground for a hundred years or longer.

An aging rail system not designed to accommodate such heavy loads adds to the dangers. Volatile nuclear fission material cannot be subjected to any mechanical or human error. Once nuclear fission material is released, it cannot be recaptured, endangering the public health and all life forms as the material is dispersed through the air, waterways, and soils.

Nor does the Department of Energy (DOE) have any coherent plan in place to manage the nuclear weapons waste that is piling up at more than 150 sites across the country. DOE needs to quickly shift gears and craft a comprehensive plan to shutter currently operating nuclear plants and isolate all existing nuclear waste before we face yet another Fukushima of our own making, created by a willingness to let the nuclear industry call the shots. DOE can no longer allow the nuclear industry to create distractions that divert vital resources away from communities that have already been robbed of their clean air, clean water and the opportunity to build a truly just renewable energy future that is clean and safe

Climate Change

Human-driven climate change must also be considered. A recent report by the Intergovernmental Panel on Climate Change emphasized the need for immediate, bold action to combat climate change. In New Mexico, we have been subjected to intense wildfires, drought, heatwaves and windstorms. All too often, the impacts of extreme climate changes are felt disproportionately by marginalized communities, points out New Mexico Senator Ben Ray Lujan.

Real Solutions

GAO's recommendation that Congress should consider directing DOE to develop and implement an integrated waste management strategy is good advice, albeit with considerable outreach and broad opportunities for public participation, especially from frontline EJ communities that have historically suffered disproportionate impacts from the nuclear fuel and weapons industries without receiving any compensation for their injuries or the environmental harms inflicted. In the meantime, a national plan to decommission all aging nuclear reactor sites over 40 years old should be developed. No new nuclear reactors should be licensed until a plan is in place for the permanent isolation and disposal of all nuclear waste - past, present, and future.

Federal investments to prolong the use of fossil fuels and nuclear energy, along with the production of more nuclear weapons, will obstruct the deployment of truly renewable no-cost energy sources like the sun and wind that can lead us toward a more just, clean and reliable energy future without adding to the carbon pollution in overburdened communities, or increasing the dangers of another nuclear disaster. Our planet, climate, and communities should not be subjected to that kind of existential threat.

Submitted by:

L. Watchempino

[REDACTED]

From: Harold Watson
Sent: Friday, February 25, 2022 9:26 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Harold Watson



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From: Dahmen, Lois (ECY)
Sent: Friday, March 4, 2022 12:16 PM
To: Consent Based Siting
CC: Dahl, Suzanne (ECY); Wood, Kelly T (ATG); Bowen, David (ECY); Schleif, Stephanie (ECY); North, Teri (ECY)
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage
Attachments: Cover Letter - Ecology Comments RFI - Consent-Based Siting and Federal Interim Storage.docx.pdf; Ecology Comments RFI - Consent-Based Siting and Federal Interim Storage.pdf

The Washington State Department of Ecology is submitting the attached letter and comments in response to the Federal Register Notice of Request for Information (RFI) on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities.

If there are any issues with this email, please contact me. For questions regarding the comments, please contact Suzanne Dahl at [REDACTED]

Lois Dahmen
Program Manager's Assistant
Nuclear Waste Program
Washington State Department of Ecology
[REDACTED]

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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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March 3, 2022

U.S. Department of Energy
Office of Spent Fuel and Waste Disposition
Office of Nuclear Energy
1000 Independence Ave. SW
Washington, DC 20585

RE: Washington State Department of Ecology Comments on Federal Register Notice,
Docket ID Number 2021-25724, Request for Information (RFI): Consent-Based Siting
and Federal Interim Storage

To Whom It May Concern:

The Washington State Department of Ecology (Ecology) submits the attached comments on the Federal Register Notice: "Notice of RFI on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities," posted on December 1, 2021.

As a general matter, Washington State has concerns about purported interim storage that is, in practice, long-term storage. We urge the federal government to remain focused on siting a permanent repository for the nation's nuclear waste. The Hanford Nuclear Reservation located in Washington State has become a de facto interim storage site without the consent of the State or sovereign nations in the region. Currently, Washington is the default interim storage facility for a variety of high-level waste and spent fuel: Spent fuel from Hanford operations, sludges from spent fuel cleanup at K-Basin, and Hanford's 56 million gallons of high-level tank waste. Washington is also expected to store immobilized high-level waste after it is vitrified while we await a deep geologic repository. The receipt of additional offsite waste for interim storage would add to the already unacceptable waste burden borne by Washington and its residents and to which the State did not consent.

Due to these circumstances, Ecology has concerns about what the Department of Energy will define as "consent" of affected parties in its proposal for "consent-based siting." Further, it is essential that all impacted communities, especially those with environmental justice considerations, be included in siting decisions in a meaningful way. Unfortunately, the Department of Energy does not currently have the community engagement or outreach infrastructure in Washington to do this.

U.S. Department of Energy
March 3, 2022
Page 2

Additionally, we stress the need for state regulatory authorities to have appropriate influence over the decision-making process. Ecology is the regulator at the Hanford site through delegated authority of the Resource Conservation and Recovery Act. Ecology is not a stakeholder in cleanup or storage decisions, it is a partner.

Because of the potential for Hanford to be considered as an interim storage site through this consent-based siting process, we have provided responses to your request for information with our perspective and recommendations on critical issues such as the definition of "consent" and the states' role in permitting or otherwise regulating any interim storage sites that are ultimately selected.

If there are any questions regarding these comments, please contact Suzanne Dahl at

[REDACTED]

Yours Truly,

A handwritten signature in black ink, appearing to read "Laura Watson", is positioned above the printed name.

Laura Watson
Director

Enclosure: Comments on RFI: Consent-Based Siting and Federal Interim Storage

cc electronic: Suzanne Dahl, Ecology
Kelly Wood, AGO

Washington State Department of Ecology Responses
RFI: Consent-Based Siting and Federal Interim Storage

The Washington State Department of Ecology urges the U.S. Department of Energy (Department) to focus on siting a permanent repository for the nation's nuclear waste. We remain concerned that interim storage sites will be used long-term and become de facto permanent repositories. We urge the Department to act swiftly to move waste off the Hanford Nuclear Reservation in Washington, which has become a default interim storage facility without the consent of the State. With this in mind, below are our responses to the specific questions in the Department's Request for Inquiry. If there are any questions regarding these comments, please contact Suzanne Dahl at [REDACTED]

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

To be successful, considerations of social equity and environmental justice must be at the center of a consent-based siting process. This involves examining and addressing the historical, current, and future burdens and risks of the communities most impacted by nuclear energy generation and waste storage. This includes creating strategic and accountable actions that address social equity by eliminating access barriers to information and decision-making for underserved and unrepresented populations affected by the Department's actions. This also includes strategic and accountable actions to address the environmental justice impacts to communities of color, low-income populations, and tribes affected by the Department's actions. A consent-based siting process would meaningfully include these communities and tribes potentially affected by nuclear waste storage, and the needs and concerns of the affected parties would demonstrably influence siting decisions.

To minimize the potential for this process to exacerbate existing social inequities and environmental injustices, we strongly recommend involving communities early and throughout the consent-based siting process and giving them a significant role through which they can effect meaningful change in the decision-making process. By this we mean robust community education and engagement. This is critical at Hanford, where historical housing segregation policies for Hanford workers created disparities across communities that persist today. We strongly recommend committing at the outset to performing a robust and comprehensive analysis under the National Environmental Policy Act (NEPA) prior to selecting any location as an interim storage site.

The NEPA analysis must have a broad enough scope to effectively consider a wide range of social and environmental justice issues, including but not limited to future impacts of climate change and the indirect impacts of an interim storage facility such as increased traffic on local roads and the increased risk of exposure associated with waste shipments.

Another important consideration for social and environmental justice in the context of consent-based siting is the impact on future generations, especially given the risk that interim storage sites could turn into de facto permanent disposal sites. The siting process should ensure that community engagement is not focused solely on a limited geographic area such as within state borders, to the extent that near-term and long-term impacts may be felt more broadly.

Washington State Department of Ecology Responses
RFI: Consent-Based Siting and Federal Interim Storage

For example, Hanford is located on the Columbia River, the downstream portion of which forms the border between Washington and Oregon; any additional contamination of the river will have impacts on tribes and communities in both states, as well as others across the region who rely on the health of this river to support commercial fisheries, recreational opportunities, etc.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

As you are aware, Washington State has a unique perspective as a state long engaged in “cooperative federalism” related to the treatment, storage, and disposal of nuclear waste. Based on this experience, we cannot stress enough that states need a regulatory decision-making role in the determination of siting a federal interim storage facility.

With regard to states that may not have an existing regulatory role, we recommend forming a broad-based group of local, tribal, and state representatives to serve as a commission. The group should have a scope of authority over the decision-making for the siting of an interim storage facility. The Department should also insure that tribes are offered requisite government-to-government consultation as part of the process.

3. What benefits or opportunities could encourage local, state, and tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

Interest groups, tribes, and state regulatory agencies would all contribute in significant ways if given a place at the table, and the Department should prioritize taking steps that encourage participation. As noted, states should be given regulatory authority. To encourage meaningful participation, the Department should also provide grants to local, state, and tribal governments to actively engage and advise the Department.

Moreover, the Department should ensure that public meetings reserve sufficient time for questions from stakeholders and responses by the Department. Assurance that meeting participants will have ample time to provide input into the siting decision-making process, will increase participation and build trust with local, state, and tribal governments. In other words, if consensus is defined by weighing input broadly from the community, state, and tribal governments, engagement will increase.

7. What other issues, including those raised in the *Draft Consent-Based Siting Process* ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

Washington State is already home to long-term interim storage of radioactive and hazardous waste at the Hanford site. Washington State, through the Department of Ecology, does not support future interim spent fuel storage facilities being located in the state because of the ongoing impact to both the state, tribes, and local communities from the legacy waste at Hanford.

Washington State Department of Ecology Responses
RFI: Consent-Based Siting and Federal Interim Storage

In addition, there is waste that has been—and will continue to be—disposed of at Hanford in landfills, including tank waste, immobilized low-activity waste, and tank waste residuals after retrieval and closure. The following is a list of waste currently in storage at Hanford most of which is awaiting disposal at a deep geological repository:

- Waste not from Hanford Mission:
 - Shipping port Fuel: 2 million curies from Pennsylvania commercial nuclear reactor
 - Fast Flux Test Facility Fuel: 15-20 curies from 400 Area, now stored in 200 Area
 - German Vitrified Logs: 7-8 million curies, from the 300 Area, now stored in 200 Area
 - Commercial Origin Light Water Reactor Fuel, studied in 300 Area, now stored in 200 Area
 - TRIGA Fuel, stored in 200 Area
- Spent Fuel from Hanford
 - From K Basins:
 - 2,100 metric tons (2,300 U.S. tons) in volume and about 400 Multi-Canister Overpacks. Approximately 55 million curies. Stored for disposal at Deep Geologic Disposal
 - Sludges, treated and stored for disposal at Waste Isolation Pilot Plant (WIPP)
 - Other sources:
 - Burial grounds
 - Old reactor sites
 - River Corridor Cleanup
- Cesium and Strontium Capsules
 - 1933 capsules at approximately 130 million curies. In process of being moved from water basin storage to above ground storage. Will either be integrated into Immobilized HLW glass or shipped directly to Deep Geologic Disposal
- HLW Tank Waste
 - Cs Ion exchange columns from DFLAW
 - Immobilized HLW glass (approximately 185 million curies, 36,000-48,000 metric tons of glass, 12,000-16,000 canisters stored awaiting disposal at Deep Geologic Disposal. Waste is currently in old failing tanks, will be vitrified, and then stored for eventual deep geologic disposal.
- Low-activity tank waste
 - Generated from treatment of HLW and to be disposed of onsite at IDF
- Other Transuranic waste awaiting disposal at WIPP

Washington State Department of Ecology Responses
RFI: Consent-Based Siting and Federal Interim Storage

Area 2: Removing Barriers to Meaningful Participation

4. How might the Department more effectively engage with local, state, and tribal governments on consent-based siting of federal interim storage facilities?

As noted above, the Department will more effectively engage with local, state, and tribal governments if there is opportunity for substantive involvement. Substantive involvement can arise in a number of different ways, but at a minimum must involve creating a dedicated time and space for local, state, and tribal governments to ask questions and share concerns.

Given the current impacts of the COVID-19 pandemic on public engagement, government entities have shifted to virtual meetings with little opportunity for in-person engagement. Online virtual meetings present numerous engagement barriers, including access to technology, broadband, awareness of events, and multi-language and disability access. This can suppress or limit engagement, and perpetuate environmental justice concerns by excluding those communities and populations most impacted by the Department's decisions. Therefore, it is important to have a tailored plan to engage and inform the public, including in-person and online meetings, meetings at various locations and times, and information sharing through local media and languages that effectively reach the intended audience and affected community.

Importantly, we recommend the Department outline in advance how comments and concerns gathered through engagement will be used to inform decisions. Local, state, and tribal governments must be treated as partners in a collaborative and respectful process.

5. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

Communities, governments, and other stakeholders need answers to the following questions:

- What are the environmental impacts to the site?
- What are the regulatory requirements?
- How are National Environmental Policy Act requirements taken into consideration?
- What is the broader risk to the community, including risks associated with transportation of spent fuel, construction activities, and the environmental risks posed by emergencies such as fire, earthquake, or other natural or man-made disasters?
- If there is a worst case scenario that impacts the local community, how would the Department compensate the people and affected community?
- Who weighs in on the decision?
- How many interim storage sites are being evaluated?
- What is the future land use?
- How will input be considered in the Department's decision-making?
- How long does the Department intend to use the site as interim storage?

Many of the bullets listed above are areas that would also be involved in a robust Environmental Impact Statement.

Washington State Department of Ecology Responses
RFI: Consent-Based Siting and Federal Interim Storage

Area 3: Interim Storage as Part of a Waste Management System

1. How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?

The Department can ensure social equity and environmental justice have been considered by having an independent expert federal agency assess the effectiveness and implementation of the Department's social equity and environmental justice program implementation. For example, the U.S. Environmental Protection Agency (EPA) Office of Environmental Justice, and Office of Civil Rights may be able to provide assistance and guidance on this front. The EPA website has multiple guidance documents on integrating environmental justice considerations into agency practices, including [*Promising Practices for EJ Methodologies in NEPA Reviews*](#) and [*Community Guide to Environmental Justice and NEPA Methods*](#).

2. What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?

The benefits and drawbacks will depend on the type of facility being considered. In general, possible drawbacks may include decreases in property value for the community, higher national security risks, and the increased cumulative risk to the environment and community. In Washington, where waste is currently being stored without the consent of the state, risks to the Columbia River and nearby tribes and communities are high as aging infrastructure continues to create leaks and releases.

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

The Department must remain focused on establishing a permanent repository. It should appropriately plan for waste being moved to a permanent repository as soon as possible and in the construction of interim storage. This should include ensuring that waste or fuel is appropriately packaged for shipment and storage. Furthermore, the Department should not lose sight of the fact that progress on a permanent repository *must* be made and should not be diminished with the identification of an interim storage facility. The nation needs a long-term solution to spent fuel issues. Washington State and its communities should not and cannot continue to shoulder the burden of nuclear waste for the nation.

From: ira werner
Sent: Monday, February 28, 2022 3:37 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

I have a very strong opinion on interim based storage of waste management from the nuclear industry.

I suggest that co-location is the best alternative. The key is what the waste is to be co-located with.
I suggest co-locating it with all of the CEOs and Board of Directors of the corporations that profited from the use of nuclear energy and nuclear weapons.

Move all of these people and their families to one location and store the hazardous waste underneath their homes.

This way the people who directly caused the issue and profited directly from it get to live directly with the fruits of their efforts.

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From: White, Sean
Sent: Thursday, March 3, 2022 1:39 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal
Attachments: Amentum_DOE_RFI Response_ConsentBasedSitingProcess_20220303.pdf

Importance: High

To Whom it May Concern,

Attached to this email are the response comments of Amentum to Notice of Request for Information (RFI), on Using a Consent-Based Siting Process To Identify Federal Interim Storage Facilities, 86 FR 68244 dated December 1, 2021.

Thank you.



D. Sean White
Director, Business Development
Technical Services

[REDACTED]
[REDACTED]
[REDACTED]

W: amentum.com

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March 3, 2022

VIA EMAIL

Office of Spent Fuel and Waste Disposition
Office of Nuclear Energy, Department of Energy
P.O. Box 999
Attn: Alisa Trunzo
[REDACTED]
Email: consentbasedsiting@hq.doe.gov

Subject: RFI Response - Consent-Based Siting and Federal Interim Storage

Amentum is providing the Office of Spent Fuel and Waste Disposition, Office of Nuclear Energy (NE), Department of Energy (DOE) with our response to the Request for Information (RFI) regarding use of consent-based siting processes to identify federal interim storage facilities. Amentum is a leading designer, constructor, and operator of radioactive waste management facilities, repositories, and programs around the world, with decades of proven experience.

We provide expertise in the siting, design, licensing, construction, operation and closure of storage and disposal systems for radioactive waste. We manage all aspects of the transport of radioactive waste and spent fuel in the US, UK, and Europe: containers, logistics, processing, and storage. To do so, we work with communities, regulators, waste consignors, and other stakeholders to safely reduce risks and facilitate these important missions. We manage treatment facilities, near-surface disposal facilities, and geologic isolation facilities. We understand that given the intense scrutiny of these facilities, successful demonstration of both operational and long-term safety to the host community requires a comprehensive social engagement approach in addition to a sophisticated project execution and employment of best practices.

Amentum appreciates this opportunity to provide feedback on using consent-based siting processes, and we look forward to the prospect of continued opportunities to work with the DOE and other stakeholders to advance the mission of safe management of radioactive waste.

Kindest Regards,

D. Sean White
Amentum
Director, Business Development
[REDACTED]
[REDACTED]

www.amentum.com

2131 S. Centennial Ave, Aiken, SC 29803

Area 1: Consent-Based Siting Process

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

Local communities oftentimes desire to host research or manufacturing facilities in support of radioactive waste storage/disposal projects, and in our experience these elements can be helpful to cultivating and sustaining stakeholder support.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

Barriers to siting and development include the long gestation period to site, license, and construct radioactive waste management facilities as such long periods often include changes in political will and political support. Another barrier is a lack of knowledge in some surrounding regional communities, which can sometimes be addressed by weighting the perspective of local/host communities higher. However, many times regional/outlying communities need to be provided information, and outreach campaigns that include them can be important to building and sustaining broader support for radioactive waste projects.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

Without a permanent repository, the DOE is somewhat hamstrung as to providing lifecycle time frames for interim storage. Information about how interim storage facilities link to progress on permanent disposal solutions could be helpful in building and sustaining support for such interim facilities.

7. What other issues, including those raised in the Draft Consent-Based Siting Process ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

Economic benefits assessments, including those from independent parties, can oftentimes help foster deeper understanding of a proposed program or project and can help cultivate support.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

Some local candidate host communities may not have the technical expertise to evaluate proposed projects, and therefore need access to funding to engage their own subject matter experts to help them make informed decisions. When such funds have been made available through a grant process, they often have proven effective in fostering mutual understanding and generating community support.

2. **What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?**

The DOE can continue its practice of providing grants to state and local units of government. Also, some rural communities may not have the same broadband internet access that more urban areas do, so some accommodation in that regard could be helpful in appropriate contexts.

5. **What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?**

In our experience, data and detailed information on planned facilities, and realistic estimates of economic impact and potential community benefits are viewed as helpful by a variety of stakeholders to foster mutual understanding and to garner community support.

Area 3: Interim Storage as Part of a Waste Management System

2. **What are possible benefits or drawbacks to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?**

Approaches that minimize double- and triple-handling of waste appear to be more acceptable, along with research activities geared toward answering important scientific uncertainties, if any, associated with such projects.

3. **To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?**

They are inextricably linked because existing federal law already includes requirements for establishing a permanent disposal solution. See also answer to Question 5, Area 1 above.

4. **What other issues should the Department consider in developing a waste management system?**

Detailed economic cost/benefit analyses, performed by independent organizations like OMB or CBO, can sometimes be helpful to fostering mutual understanding of and support for proposed projects.

From: CBG

Sent: Thursday, March 3, 2022 3:06 PM

To: Consent Based Siting

Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

Attachments: Committee to Bridge the Gap RFI letter.pdf

March 3, 2022

Office of Spent Fuel and Waste Disposition

Office of Nuclear Energy

U.S. Department of Energy

consentbasedsiting@hq.doe.us

Re: Docket # DOE-HQ-2021-0032 Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Fed. Reg. 68,244 (Dec. 1, 2021)

These comments are in response to Area 3 of the RFI: Interim Storage as Part of a Waste Management System.

- 1.
- 2.
3. *How can the Department ensure considerations*
4. *of social equity and environmental justice are addressed in developing the nation's waste management system?*
- 5.

A glaring inequity in our nation's waste management systems has been the practice of shipping waste out of the community that produced it and dumping the waste on far-off communities – often low-income communities of color. A nuclear waste management system that incorporates consolidated interim storage raises the prospect of removing spent nuclear fuel (SNF) from the communities that enjoyed the power and economic benefits, and shipping the waste to underprivileged communities that never received a single watt of that energy. Thus, to ensure that social equity and environmental justice are honored in our nation's nuclear waste management system, SNF should be kept in the community where it was produced, at the reactor site or locally relocated if the reactor site is not suitable, with strengthened safety features, until a permanent underground geologic repository is available to ship the SNF to. The guidelines for such Hardened On-Site Storage (HOSS) have already been developed by Dr. Arjun Makhijani and Kevin Kamps.

- 2.
- 3.
4. *What are possible benefits or drawbacks*
5. *to co-locating multiple facilities within the waste management system or co-locating waste management facilities with manufacturing facilities, research and development infrastructure, or clean energy technologies?*
- 6.

Interim storage of SNF, in the Hardened On-Site Storage model, should be co-located with the operating or decommissioned reactor that produced the waste. Location of SNF for “interim storage” anywhere outside

the community that produced it raises numerous risks, including heightened risk of transportation accidents, and the social and environmental injustice described under #1.

- 3.
- 4.
5. *To what extent should development*
6. *of an interim storage facility relate to progress on establishing a permanent repository?*
- 7.

DOE should not develop interim storage facilities until such time that a permanent repository has become operational. Any pursuit of interim storage will directly siphon away progress on establishing a permanent repository. Time, staff, money, and public attention are all limited resources that must not be squandered on a non-solution like CIS. Furthermore, CIS would require moving the waste twice, with all the attendant increased transportation risks (e.g., accident, terrorist attack).

- 4.
- 5.
6. *What other issues should the Department*
7. *consider in developing a waste management system?*
- 8.

DOE should implement Hardened On-Site Storage (HOSS) rather than Consolidated Interim Storage (CIS) in our nation's waste management system. Again, HOSS has largely been thought through and would be relatively simple to implement. Dr. Makhijani and Kevin Kamps have done much of this work, some of which may be read here: <https://ananuclear.org/hoss/>

DOE should focus its SNF management exclusively on establishing a permanent repository. Consolidated interim storage is a distraction that puts at risk communities that didn't benefit from the nuclear power and didn't ask for the waste – including low-income communities of color, as well as people that haven't yet been born. The most responsible path forward for DOE at this time would be to set aside such distractions, implement HOSS to provide for the safe interim storage of SNF, and proceed with urgency toward the establishment of one or more carefully sited, technically robust permanent underground repositories.

Signed,

Haakon Williams
Deputy Director
Committee to Bridge the Gap



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March 3, 2022

Office of Spent Fuel and Waste Disposition
Office of Nuclear Energy
U.S. Department of Energy
consentbasedsiting@hq.doe.us

Re: Docket # DOE-HQ-2021-0032 Request for Information on Using a Consent-Based Siting Process to Identify Federal Interim Storage Facilities, 86 Fed. Reg. 68,244 (Dec. 1, 2021)

These comments are in response to Area 3 of the RFI: Interim Storage as Part of a Waste Management System.

1. *How can the Department ensure considerations of social equity and environmental justice are addressed in developing the nation's waste management system?*

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Signed,

Haakon Williams
Deputy Director
Committee to Bridge the Gap

A large black rectangular redaction box covering the signature of Haakon Williams.

From: Alan Wojtalik
Sent: Wednesday, March 2, 2022 4:14 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

The DOE must not target and coerce the most vulnerable communities into accepting nuclear waste dumps under the guise of "consent." Prioritize environmental justice, listen to community voices, and respect non-consent in managing nuclear waste.

Here are my recommendations:

1. Stop making nuclear waste— Cease making and promoting nuclear power and weapons so we can limit the amount of waste that must be isolated for tens of thousands to millions of years. DOE is actively promoting new nuclear power and weapons so, clearly, it has no intention of limiting the amount of waste produced.
2. Stop lying— Nuclear waste is not safe. It remains dangerous to humans, living beings, and the environment for millennia and can cause cancer in addition to many other painful and debilitating health effects. The waste DOE is seeking to site won't be moving away in the foreseeable future. The sites DOE is seeking are unlikely to be "temporary" or "interim" as claimed because it has no plans for a long-term repository or management program.
3. Don't try to bribe people—Don't target poor, Indigenous, Black, or Latino communities and force them to choose between their health and safety and their economic well-being.
4. Do your job— Review and respond to what the public told DOE about consent-based siting in 2016 and 2017, when thousands of people around the country responded to DOE requests for public comment. Six years later, DOE has not responded, nor explained why it is now asking the same questions for the third time.
5. Respect the will of the people— Don't gang up on communities with concerns by "partnering" with businesses and corrupt officials to strong-arm people into "consent".
6. Protect people where nuclear waste is stored now— Use any resources allotted for "interim" or "temporary" storage to improve the storage of nuclear waste at and near where it is located. This avoids unnecessary transport through poorer and marginalized communities that would violate environmental justice.
7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Alan Wojtalik



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From: Nikki Wojtalik
Sent: Thursday, March 3, 2022 1:27 PM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent Based Siting and Federal 'Interim' Storage

Dear DOE - CBS Department of Energy - CBS,

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7. Respect non-consent - No means no. Respect and accept communities' refusal to consent to nuclear waste sites.

Sincerely,
Nikki Wojtalik



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From: Charlene Woodcock
Sent: Wednesday, December 1, 2021 11:07 AM
To: Consent Based Siting
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

TO: Office of Spent Fuel and Waste Disposition, Office of Nuclear Energy, Department of Energy

Greetings. Please withhold my address, phone number, and email address from the public record.

I very strongly support consent-based siting. It's all too clear that to this point, siting has been thrust upon those people the least able to afford to oppose it; and some operations have had extremely deleterious consequences.

Were nuclear power plants or waste storage sites proposed for siting near wealthy communities, clearly they would be successfully opposed. Surely this fact should raise the most basic question of why the U.S. government continues to allow nuclear power production and its toxic waste. The refusal of private insurers to insure nuclear plants is telling.

Area 1: Consent-Based Siting:

State and local governments and citizens, Tribal governments and members should be presented with a siting proposal before investment in planning for an operation at that potential site. Their concerns and responses should be documented, tallied, and assessed by disinterested scientific experts on the consequences of nuclear radiation before any decision to proceed with planning is allowed.

For decades the Navajo nation has suffered the deadly health consequences of very irresponsible uranium mining, with toxic tailings left exposed on the surface of reservation lands, harming children and anyone who comes in contact with them. This is a deeply shameful consequence of the failure of the U.S. Department of Energy to take rigorous care in all its operations to prevent harm to U.S. residents and the environment.

Local residents near where a nuclear energy-related operation is to be sited must be allowed to voice their concerns. It is no surprise that any sensible, thoughtful person would be opposed to the siting of a dangerous operation near their community. For this reason the impetus behind continuing with nuclear energy projects must be examined without bias. Integrity must be brought to a cost-benefit analysis of nuclear energy. The effort to identify nuclear-based energy production as "green" must be corrected to include the very high financial and environmental costs of the construction of nuclear power plants, and the ongoing security costs and lack of a solution for their radioactive waste products factored in to overall costs. Renewable solar and wind energy are vastly less expensive and do not include the burden of securing the ongoing production of toxic radioactive waste.

There is something very wrong in the ongoing commitment to such extremely hazardous operations as nuclear power plants when the nuclear industry has failed to provide a solution to its own hazardous waste. To be discussing interim storage sites when the hazardous materials continue to be allowed to build up and nuclear power plants continue to be proposed is grossly irresponsible and must cease.

The first step must be a moratorium on all new nuclear facilities or projects until a safe and sensible solution is found for the disposal, not mere storage, of nuclear radioactive waste products of all sorts. It is an extreme disservice to the U.S. public and future generations to allow an industry to continue to produce toxic waste that will be life-threatening unless rendered safe or very securely stored for hundreds, even thousands of years. The arrogance and heedlessness of this industry and those government representatives who support it is staggering.

Sincerely,
Charlene M. Woodcock

[REDACTED]
[REDACTED]

████████████████████
████████████████████

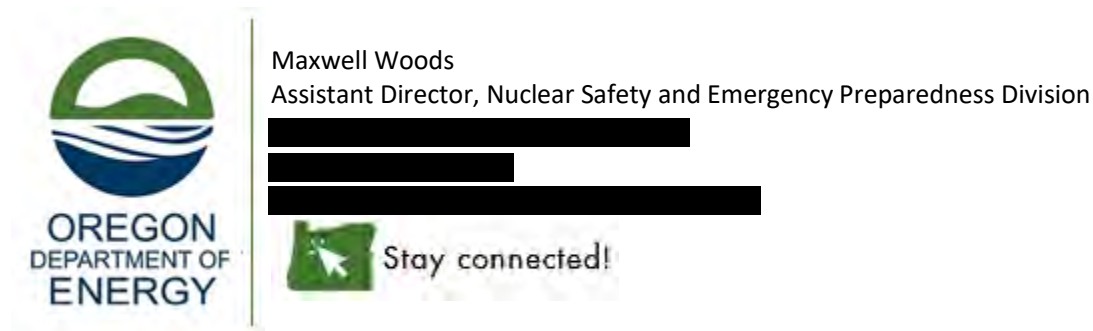
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From: WOODS Maxwell * ODOE
Sent: Friday, March 4, 2022 5:01 PM
To: Consent Based Siting
Subject: [EXTERNAL] Oregon Hanford Cleanup Board Comments on Consent-Based Siting RFI
Attachments: 2022-03-04-Oregon-Letter_Consent-based Siting RFI.pdf

Good evening,

Attached please find the response from the Oregon Hanford Cleanup Board to the US Department of Energy's Request for Information on the subject of consent-based siting for interim spent fuel disposal facilities.

Thank you,
Max



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March 4, 2022

To: Principal Deputy Assistant Secretary for the Office of Nuclear Energy, US Department of Energy

Subject: Request for Information; Consent-Based Siting and Federal Interim Storage

The Oregon Hanford Cleanup Board, on behalf of the State of Oregon, appreciates the opportunity to respond to the US Department of Energy's Request for Information regarding a consent-based siting approach to federal interim storage of nuclear waste. The search for a solution to the nation's nuclear waste disposal problem affects us all, in Oregon and across our nation. It is an important determinant not only of the long-term risk to individual communities that host such waste currently at disbursed locations across the country, including in Oregon, as well as to the potential future host locations of consolidated waste storage repositories.

Oregon retains an interest in the process for establishing a repository for two main reasons:

1. Oregon still hosts the spent fuel from the Trojan nuclear plant nearly three decades after its final shutdown; and
2. The Hanford site along the Columbia River just north of our border in Washington is host to a large quantity of both spent nuclear fuel and defense high-level waste that for decades was intended to share space at a future deep geologic repository.

We recognize that the scope of the RFI is focused on the siting of an interim spent fuel storage facility only. Oregon would welcome the success of any spent fuel storage solution – interim or permanent – that results in the permanent removal of the spent fuel from the Trojan nuclear power plant out of its current Independent Spent Fuel Storage Installation to a safe, centralized repository.

In response to the RFI, we wish first to make you aware of Oregon's statutory and administrative structure as it pertains to the siting of a nuclear waste repository. In 1979, Oregon passed Oregon Revised Statute 469.525, which prohibited the establishment or operation of any facility for the disposal of radioactive waste within the state. In 1987, Oregon passed a series of statutes to address the national process that culminated in the amended Nuclear Waste Policy Act. The Oregon statutes, which are included as an attachment to this letter for reference, were predicated on a sense of disappointment and distrust associated with the process that led to the selection of a single western location for a repository, as opposed to two repository locations, one in the western US and one in the eastern US, as was intended by the process. In response, the Oregon legislature directed the state government to use all legal

means necessary to oppose the US Department of Energy's siting efforts until certain requirements were met. These requirements include compliance with the intent of the Nuclear Waste Policy Act and ensuring that any site selected "considers all acceptable geologic media and results in safe, scientifically justified and regionally and geographically equitable high-level nuclear waste disposal" (Oregon Revised Statute 469.585).

In addition to the broad direction on this subject, the Oregon legislature in 1987 also established the Oregon Hanford Cleanup Board to be a body that, "serves as the focal point for all policy discussions within the state government concerning the disposal of high-level radioactive waste in the northwest region" (ORS 469.573). In this capacity, the Board is to act as the initial agency in the state to be contacted by any federal agency on any matter related to the long-term disposal of high-level radioactive waste. The Board is also responsible for reviewing any associated plans or applications and making policy recommendations to the Governor, the Legislative Assembly, and the state's designated lead negotiating agency on any matter related to the long-term disposal of high-level radioactive waste. If the US Department of Energy selects the Hanford Nuclear Reservation as the site for the construction of a repository for the long-term disposal of high-level radioactive waste (HLW), the Oregon Hanford Cleanup Board is empowered by the Oregon legislature to review the selected site and the site plan according to a series of criteria. Together, these statutes reflect Oregon's continued interest in the disposition of spent nuclear fuel and high-level defense waste.

Oregon continues to have reasons to be wary regarding USDOE's actions regarding HLW – most recently DOE's unilateral actions to reinterpret the definition of HLW in ways that ignore the prior advice of the National Academy of Sciences (NAS) and conflate the comments of the Nuclear Regulatory Commission (NRC) and others as support for their interpretation. DOE has repeatedly ignored requests to engage in frank discussions with stakeholders including state governments, Native American tribal governments, local communities, or seemingly any other interested party, regarding the intention and expectations for utilizing the reinterpretation of the HLW definition. DOE has also not provided a clear delineation of which wastes across the complex would be expected to still qualify as HLW under its new interpretation, leaving many stakeholders at defense waste sites more uncertain of the future than ever. USDOE's actions surrounding this issue and its stakeholders undermine the ability to trust subsequent processes such as siting of a waste repository. These fundamental relationships need to be renewed and bolstered if DOE is to succeed in its objectives.

The nation's nuclear waste problem will be solved at the speed of trust. The site selection process should establish both technical site selection criteria (such as dose/risk limits, geology, environmental setting, land use patterns, natural hazard risk, etc.) as well as a "social license to operate" criteria. It also must be accepted that the process will be lengthy and will be expensive, and a potential host community has a right to expect much more investment from the federal government than just the waste repository alone. The organization and the process should establish its legitimacy and seriousness at the outset.

Too many times this nation has started but never finished tackling the problems of establishing a waste repository, and the people of Oregon and the nation are ready for a solution. The

Oregon Hanford Cleanup Board, on behalf of the State of Oregon is hopeful that a safe, suitable, and acceptable repository location can be sited and successfully placed in operation.

Sincerely,

Jeff Wyatt

Chair, Oregon Hanford Cleanup Board

Note: The Oregon Department of Energy acts as staff to the Oregon Hanford Cleanup Board, and in this capacity, they solicited feedback from Board members at our January 2022 meeting in response to this RFI. Responses to the individual RFI questions are included below as Attachment 1. There was a range of opinions.

Attachment 1: Specific Responses from Members of the Oregon Hanford Cleanup Board to Questions Posed in the RFI

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

The Blue Ribbon Commission on America's Nuclear Future explored two areas of social equity:

- A. Intra-regionally. Consider more than one site and disperse regionally. This may also reduce transportation concerns.*
- B. Intergenerationally. Simply get it done while the folks who enjoyed the electricity are still alive. As for Environmental Justice, do it right, and have the performance analysis to prove it. A preliminary step should be to gather a consensus-based group of subject matter experts and interested members of the general population at many diverse locations throughout the country, without a site in mind, to consent on siting criteria specific to social equity and environmental justice. A dry run could begin soon, as site characteristics would not be needed, and the outcome might have a useful influence on site characterization and selection of potential candidate sites.*

I'm writing this on 3/4/22 as 15 nuclear reactors at Zaporizhzhia in Ukraine are at risk of nuclear attack and destabilization, where war has taken the world to the brink of a major nuclear disaster, unlike any we have ever seen. This development should act as a warning to agencies like DOE, and to all of us, of how fragile are nuclear plants and their wastes. As one journalist called nuclear power plants—"pre-deployed nuclear weapons." An "Interim" storage site is not a solution. We already have these all over the country where there are aging or decommissioned power plants, spent uranium mines. etc. These sites should be made safer until a deep geologic repository is found. Then and only then should wastes be moved. Moving wastes to "interim" storage sites, at great risk and expense, which may in the end have to be returned to site of origin seems very dangerous and impractical. Social equity and environmental justice cannot be "built into" the siting process. Social equity and environmental justice should inform and determine the siting process. And if this land ethic is absent from a locale, then this needs to be addressed along with a thorough education about nuclear wastes. This includes health impacts and security issues as part of living with these wastes.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

Most people, including many local government leaders are either not well-versed in—and may be too busy to learn about—a subject as complex as nuclear waste storage. Their opinions should not necessarily hold more weight than some citizens they represent, who clearly have taken the time to learn about the subject

More than such a problematic lack of knowledge, local politicians are often influenced by parties hoping for short-term economic gains, fearful-of-waste-site real estate interests and campaign contributors.

If it's a consensus, input from various publics needs to be equal. Question 2 should be the first order of business at the first meeting: "What role should Tribal, State, and local officials and governments play in consenting to siting". Get consensus on this first. Also, all parties need to feel assured the site is sound, that the state is up to the regulatory demands of such a facility, that they all will not be unfairly burdened, and that it is truly interim. A "hot cell" co-located to deal with ageing Spent Fuel management issues would offer some assurance, particularly for high burn up fuel. Onsite support infrastructure could also ensure that re-casking for final disposal, should it be necessary, can be done expeditiously.

Tribal, state and local governments have a critical role in consensus-based siting of a permanent nuclear waste site, as well as the "interim" sites already located all over the country. These stakeholders, along with other public institutions like schools, churches, non-governmental organizations, etc. should be included in any decision for the siting of nuclear wastes. This is a steep educational curve as U.S. citizens have not been educated for the most part about the nuclear narrative they inhabit.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

That it is interim is the key. It may not be enough to point to the success of Finland and Sweden on the road to deep geologic disposal. USDOE should make it a condition as part of the plan that if after a certain amount of time, say fifty years, a deep geologic repository is not available, the spent fuel will be returned to the generator.

Once geologically suitable candidate sites have been identified, a suite of sites that are geographically dispersed, and ideally in the same region as the reactors, should be publicized nationally to the relevant Tribes and local government

officials simultaneously. Then the relevant Tribes and government officials should be asked what they need to take this on.

As mentioned in the OHCB letter re: Consensus-based siting, transparency is key. The public's trust in DOE has been severely eroded over the years. The first consensus siting decision should be whether "interim" storage is the best solution for remediating our nuclear wastes. Answering questions such as: Why are we continuing to create more waste when we have no way of disposing of it? will need to be addressed. Agencies like DOE must recognize that ignoring catastrophes like climate change and the bombardment of the Zaporizhizha nuclear power plant in the Ukraine manifest because these agencies are so insulated from what's happening on the ground, in people's lives, what we know, what we are learning as citizen scientists, etc. DOE must learn how to collaborate and accept that we know and understand things about nuclearism that agencies like DOE itself do not know.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

*The most potent barrier is the lack of the existence of a permanent long-term storage facility and **the fear that an "interim" site may become a de facto permanent or very long-term site.***

This problem might be resolved as follows:

- A. Require the entities sending the waste, to continue to have ownership of the waste, and liability for damages incurred until the waste is fully under the management of the receiving site.*
- B. Require a legally binding financial instrument, as described in RCRA, to provide funding for eventual removal of the waste and reclamation of the site. Because private companies may cease to exist before such funds are needed, such assurance funds should be independent and appreciate with inflation or with other known changes in the current-day costs of removal.*
- C. If, after a certain period of time (e.g., 25 years) the receiving community asks for removal or when a long-term storage repository becomes operational, the original owner of the waste or the above fund would pay for its secure repackaging, removal, and transportation out of the community.*
- D. The DOE should prioritize above other major projects, the efforts to establish a permanent repository for these wastes.*

Barriers: Lack of transparency, credibility, responsibility. Does DOE or better an independent siting agency as proposed in the OHCB letter, know what it's doing? For instance: Is the climate crisis factored into storage sites such as wildfires,

flooding, war? What kind of Emergency Response is in place? What will security for this site look like?

Addressing these barriers: Working with communities, developing trust and encouraging us to take ownership of these sacrificial landscapes we live in.

Taking responsibility to educate and support impacted communities living near these sites to make decisions about this nuclear legacy.

DOE must be willing and able to learn and understand the indigenous wisdom of place. Working with local knowledge is crucial. Factoring in climate change is crucial. When we don't see this happening DOE loses its credibility.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

At some point mid-process, a sizeable budget should be spent educating candidate communities regarding the costs and benefits of being a disposal site, before their input is considered final. That is, the public has a right not just to an opinion, but to an informed opinion on this highly complex and potentially long-term matter.

Make sure everyone is at the table when plans are created and implemented to monitor storage of wastes-- in perpetuity. This begins with deciding whether "interim" storage is reality-based. By sharing the true risks and challenges of dealing with these wastes, a way forward can open up. It's not a quick or clean process. Many issues will emerge, which must not be excluded from the process initially. Everyone who wants to be heard must be heard.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

Some organizations that are regional or local may have good outreach and a history of defending the civil liberties of minority communities in the proposed areas and should be given priority.

But some civilian organizations that may appear to be non-partisan may also have leadership with less-than-obvious ties to vested interests. E.g., in a field as complex as nuclear energy, people associated with for-profit entities, such as nuclear power companies, are often looked to, in their communities, for information. The DOE should inspect the credentials of such leaders and avoid working with organizations with influencers that have even the appearance of a conflict of interest.

Educate and train community educators to inform community members about “interim” storage of wastes. These educators can be drawn from diverse community stakeholders: state, county, and local governments, Tribal governments, civil associations, health centers, schools, churches, neighborhood and home owners associations, basically any group that can be included. Educators should be compensated.

Area 2: Removing Barriers to Meaningful Participation

1. What barriers might prevent meaningful participation in a consent-based siting process and how could those barriers be mitigated or removed?

A rushed schedule for the process might well prevent meaningful participation. DOE needs to be thinking in terms of years, not months, for this effort.

Lack of high-speed internet access in many rural areas is a major barrier that could prevent real outreach to the communities involved. It could also hamper education needed for having informed consent. This would reduce the likelihood of litigation down the road.

The lack of knowledge of such a complex subject as the risks to public health of stored nuclear waste is a barrier that can be removed only by spending a lot of time and resources doing outreach and science-based education.

In 2017, the Government Accountability Office (GAO) observed that “In summarizing the public comments DOE had received as part of its public solicitation on consent-based siting, DOE reported in September 2016 that a lack of trust and credibility—particularly, lack of trust in DOE—were recurring themes and major impediments to the success of a consent-based siting process.”¹ Time and again, expert panels and even DOE officials have stated that an independent waste management organization would be more effective in gaining stakeholder trust and completing a repository siting process. DOE should strongly consider whether the repository siting process would be more successful if led by a new, wholly independent organization of the federal government, which is disconnected from the history of prior waste repository siting attempts. Such an organization would need a sole focus – establishing a clear, transparent, and comprehensive site selection process before ever targeting any particular location. In establishing such a process, the organization would need to build its credibility with the entire country, including potential host communities, host states, neighboring states and communities, Native American tribes, and the general public.

¹ <https://www.gao.gov/assets/gao-17-174.pdf>

2. What resources might be needed to ensure potentially interested communities have adequate opportunities for information sharing, expert assistance, and meaningful participation in the consent-based siting process?

A large outreach budget for advertising and education will be needed.

DOE should work with the other federal agencies to prioritize high-speed internet development that may arise from other federal spending (e.g., the Infrastructure Investment and Jobs Act) in candidate communities.

3. How might the Department more effectively engage with local, State, and Tribal governments on consent-based siting of federal interim storage facilities?

We do not believe it is possible to trust the assurances of a long-term performance model if the process of developing that model is not trusted and if the developing agency can rubber stamp the results without external consent. This is not a novel idea. It has been repeated time and again by the GAO, the National Academy of Sciences, the Blue Ribbon Commission, and countless others who recognize that the siting of a nuclear waste repository is a fundamentally human decision. Thus, the siting process must balance not only technical parameters and uncertainty, but truth, perceived risk, perceived benefits, and trust.

In recent remarks made to the San Onofre Community Engagement Panel, attended by the acting Deputy Assistant Secretary of Spent Fuel and Waste Disposition, one of the presenters (not affiliated with DOE) offered the following perspective on the selection process for a spent fuel and high-level waste repository.²

“Nations that have been able to find homes for the waste did three simple things that the U.S. has not done, Issacs said: They understood if someone is going to trust you, they must believe you’re competent, and that you have their best interests at heart, and that they’ll be better off for being part of the process.”

The presenter also reflected on the value of trust in the process and the effect the attitude of the lead agency can have on the ability to earn trust:

“You listen, and respond,” Issacs said. “It doesn’t mean, ‘I understand this better than you, listen to me, I’m a scientist.’ It’s, ‘If you’re concerned, I’m concerned.’ That’s the key in a nutshell to why things work in Sweden and Finland and hopefully in Canada,”

In our opinion, these perspectives are on the right track.

² <https://www.ocregister.com/2022/02/10/3-magic-keys-to-unlock-a-permanent-home-for-nuclear-waste/>

4. What information do communities, governments, or other stakeholders need to engage with the Department on consent-based siting of federal interim storage facilities?

At a minimum, these publics need to know:

- A. *What materials would be stored, and how much.*
- B. *What is the length of time the materials would be radioactive and potentially hazardous to human health and the environment, in the event of a mishap or incursion.*
- C. *What kind of maintenance and security would be needed, and for how long.*
- D. *Would there be an expectation of taking more in the future.*
- E. *What changes to the local infrastructure (e.g., rail lines) would be required.*
- F. *What the likely health outcomes are, in the event of accidents in various scenarios (close exposure with- and without shielding, ingestion through inhalation, etc.)*
- G. *What are the best- and worst-case peer-reviewed findings for public health concerns in communities within 50 miles of sites currently storing such waste.*
- H. *What kinds of jobs would construction of the site or changes to the infrastructure provide, whether filling those positions would necessarily occur locally, and how long each position would last.*
- I. *What kinds of positions and job requirements would be needed for ongoing maintenance of the site.*
- J. *What are the expected lifespans of the initially constructed buildings, pads, transportation structures and the likely costs of replacement, with natural ageing and in the event of a severe weather event. Such potential events should include those experienced in the past in the region, or likely to occur with climate change. These should be considered using current predictions of rising global temperatures and likely sea level rise, per the National Oceanic and Atmospheric Administration.*
- K. *The public also needs to know if and how the DOE is making a new effort to site a permanent repository.*
- L. *Whether these shipments would be first in line to be deposited in a permanent repository.*

The public needs to know why this waste is being moved around in the first place.

Area 3: Interim Storage as Part of a Waste Management System

3. To what extent should development of an interim storage facility relate to progress on establishing a permanent repository?

Because Oregon's interest encompasses both spent fuel and defense HLW, we are similarly invested in siting efforts for both a permanent spent fuel repository and a separate defense HLW repository (DWR), as directed by President Obama

in 2015³ and as had begun to be enacted by USDOE⁴ until it seemingly stalled or stopped without notice. We note that the DWR page on the Energy.gov website referenced in the 2015 Federal Register notice (associated with the DWR plan⁵) is no longer available, nor do we hear any mention of a DWR in our work with DOE at Hanford. A DWR is not mentioned in this latest RFI either.⁶ The most recent public reporting regarding this effort is from 2017.⁷ While we recognize that consistency of direction across administrations is challenging, it is important for the sake of transparency and stakeholder trust that USDOE's intentions regarding the permanent disposal of defense HLW be clarified as part of any repository siting process. Oregon may support a separate repository for defense HLW, if it could lead to swifter action to safely and permanently disposing of such waste.

Citizen oversight boards consisting of members representing diverse communities should be established to monitor the various aspects of these sites: safety, budget, contractors, long term planning-- all of the factors that seem to have been ignored and/or compromised over the years.

4. What other issues should the Department consider in developing a waste management system?

- *The last question should be first and that is, "Should the fuel be moved twice?*
- *Not sure it should be a public process but would like to see evidence of a study comparing the potential damage and recovery from sabotage to an Independent Spent Fuel Storage Installation versus a consolidated storage site. This question should have priority over land usage at former reactor sites. If an attack were to happen, how would the location and fuel storage configuration affect the recovery and damage to surrounding area and population?*
- *In order to understand and conduct consensus processes, the folks doing this should conduct their own business via consensus.*

³ <https://www.presidency.ucsb.edu/documents/memorandum-disposal-defense-high-level-radioactive-waste-separate-repository>

⁴ <https://www.energy.gov/sites/prod/files/2015/03/f20/Defense%20Repository%20Fact%20Sheet.pdf>

⁵ <https://www.govinfo.gov/content/pkg/FR-2016-12-19/html/2016-30366.htm>

⁶ <https://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf>

⁷ <https://www.exchangemonitor.com/gao-report-opens-door-for-doe-to-walk-away-from-defense-waste-repository/?printmode=1>

Appendix 2: Relevant Oregon Revised Statutes Concerning Permanent Spent Fuel Repository Selection

469.566 Legislative findings. (1) The Legislative Assembly finds and declares that Oregon is not assured that the United States Department of Energy will:

(a) Consider the unique features of Oregon and the needs of the people of Oregon when assessing the Hanford Nuclear Reservation as a potentially suitable location for the long-term disposal of high-level radioactive waste; or

(b) Ensure adequate opportunity for public participation in the assessment process.

(2) Over the past 45 years, the United States has developed and produced nuclear weapons at the Hanford Nuclear Reservation and during this period large quantities of radioactive hazardous and chemical wastes have accumulated at the Hanford Nuclear Reservation, and the waste sites pose an immediate and serious long-term threat to the environment and to public health and safety.

(3) Therefore, the Legislative Assembly declares that it is in the best interests of the State of Oregon to establish an Oregon Hanford Cleanup Board to serve as a focus for the State of Oregon in the development of a state policy to be presented to the federal government, to ensure a maximum of public participation in the assessment and cleanup process. [1987 c.514 §1; 1991 c.562 §3; 2001 c.104 §204; 2003 c.186 §33]

Note: 469.566 to 469.583 were enacted into law by the Legislative Assembly but were not added to or made a part of ORS chapter 469 or any series therein by legislative action. See Preface to Oregon Revised Statutes for further explanation.

469.573 Purpose of Oregon Hanford Cleanup Board. The Oregon Hanford Cleanup Board:

(1) Shall serve as the focal point for all policy discussions within the state government concerning the disposal of high-level radioactive waste in the northwest region.

(2) Shall recommend a state policy to the Governor and to the Legislative Assembly.

(3) After consultation with the Governor, may make policy recommendations on other issues related to the Hanford Nuclear Reservation at Richland, Washington, including but not limited to defense wastes, disposal and treatment of chemical waste and plutonium production. [1987 c.514 §6; 2001 c.104 §206]

Note: See note under 469.566.

469.574 Duties of Oregon Hanford Cleanup Board; coordination with Washington. In carrying out its purpose as set forth in ORS 469.573, the Oregon Hanford Cleanup Board shall:

(1) Serve as the initial agency in this state to be contacted by the United States Department of Energy or any other federal agency on any matter related to the long-term disposal of high-level radioactive waste and other issues related to the Hanford Nuclear Reservation.

(2) Serve as the initial agency in this state to receive any report, study, document, information, or notification of proposed plans from the federal government on any matter related to the long-term disposal of high-level radioactive waste or other issues related to the Hanford Nuclear Reservation. Notification of proposed plans includes notification of proposals to conduct field work, on-site evaluation, or on-site testing.

(3) Disseminate or arrange with the United States Department of Energy or other federal agency to disseminate the information received under subsection (2) of this section to

appropriate state agencies, local governments, regional planning commissions, American Indian tribal governing bodies, the general public and interested citizen groups who have requested in writing to receive this information.

(4) Recommend to the Governor and Legislative Assembly appropriate responses to contacts under subsection (1) of this section and information received under subsection (2) of this section if a response is appropriate. The board shall consult with the appropriate state agency, local government, regional planning commission, American Indian tribal governing body, the general public and interested citizen groups in preparing this response.

(5) Promote and coordinate educational programs which provide information on the nature of high-level radioactive waste, the long-term disposal of this waste, the activities of the board, the activities of the United States Department of Energy and any other federal agency related to the long-term disposal of high-level radioactive waste or other issues related to the Hanford Nuclear Reservation and the opportunities of the public to participate in procedures and decisions related to this waste.

(6) Review any application to the United States Department of Energy or other federal agency by a state agency, local government, or regional planning commission for funds for any program related to the long-term disposal of high-level radioactive waste or other issues related to the Hanford Nuclear Reservation. If the board finds that the application is not consistent with the state's policy related to such issue or that the application is not in the best interest of the state, the board shall forward its findings to the Governor and the appropriate legislative committee. If the board finds that the application of a state agency is not consistent with the state's policy related to long-term disposal of high-level radioactive waste or that the application of a state agency is not in the best interest of the state, the findings forwarded to the Governor and legislative committee shall include a recommendation that the Governor act to stipulate conditions for the acceptance of the funds which are necessary to safeguard the interests of the state.

(7) Monitor activity in Congress and the federal government related to the long-term disposal of high-level radioactive waste and other issues related to the Hanford Nuclear Reservation.

(8) If appropriate, advise the Governor and the Legislative Assembly to request the Attorney General to intervene in federal proceedings to protect the state's interests and present the state's point of view on matters related to the long-term disposal of high-level radioactive waste or other issues related to the Hanford Nuclear Reservation.

(9) Coordinate with appropriate counterparts and agencies in the State of Washington. [1987 c.514 §7; 1991 c.562 §4; 2001 c.104 §207]

469.576 Review of Hanford as site selected for long-term disposal of high-level radioactive waste.

(1) If the United States Department of Energy selects the Hanford Nuclear Reservation as the site for the construction of a repository for the long-term disposal of high-level radioactive waste, the Oregon Hanford Cleanup Board shall review the selected site and the site plan prepared by the United States Department of Energy. In conducting its review, the board shall:

- (a) Include a full scientific review of the adequacy of the selected site and of the site plan;
- (b) Use recognized experts;
- (c) Conduct one or more public hearings on the site plan;
- (d) Make available to the public arguments and evidence for and against the site plan; and

(e) Solicit comments from appropriate state agencies, local governments, regional planning commissions, American Indian tribal governing bodies, the general public and interested citizen groups on the adequacy of the Hanford site and the site plan.

(2) After completing the review under subsection (1) of this section, the board shall submit a recommendation to the Speaker of the House of Representatives, the President of the Senate, and the Governor on whether the state should accept the Hanford site. [1987 c.514 §10; 2001 c.104 §208]

469.577 Lead agency; agreements with federal agencies related to long-term disposal of high-level radioactive waste. (1) In addition to any other duty prescribed by law and subject to the policy direction of the board, a lead agency designated by the Governor shall negotiate written agreements and modifications to those agreements, with the United States Department of Energy or any other federal agency or state on any matter related to the long-term disposal of high-level radioactive waste.

(2) Any agreement or modification to an agreement negotiated by the agency designated by the Governor under subsection (1) of this section shall be consistent with the policy expressed by the Governor and the Legislative Assembly as developed by the Oregon Hanford Cleanup Board.

(3) The Oregon Hanford Cleanup Board shall make recommendations to the agency designated by the Governor under subsection (1) of this section concerning the terms of agreements or modifications to agreements negotiated under subsection (1) of this section or other issues related to the Hanford Nuclear Reservation. [1987 c.514 §11; 1991 c.562 §5; 2001 c.104 §209]

469.584 Findings. The Legislative Assembly and the people of the State of Oregon find that:

(1) In order to solve the problem of high-level radioactive waste disposal, Congress established a process for selecting two sites for the safe, permanent, and regionally equitable disposal of such waste.

(2) The process of selecting three sites as final candidates, including the Hanford Nuclear Reservation in the State of Washington, for a first high-level nuclear waste repository by the United States Department of Energy violated the intent and the mandate of Congress.

(3) The United States Department of Energy has prematurely deferred consideration of numerous potential sites and disposal media that its own research indicates are more appropriate, safer, and less expensive.

(4) Placement of a repository at Hanford without methodical and independently verified scientific evaluation threatens the health and safety of the people and the environment of this state.

(5) The selection process is flawed and not credible because it did not include independent experts in the selection of the sites and in the review of the selected sites, as recommended by the National Academy of Sciences.

(6) By postponing indefinitely all site specific work for an eastern repository, the United States Department of Energy has not complied with the intent of Congress expressed in the Nuclear Waste Policy Act, Public Law 97-425, and the fundamental compromise which enabled its enactment. [1987 c.13 §1; 2001 c.104 §211]

Note: 469.584 and 469.585 were enacted into law by the Legislative Assembly but were not added to or made a part of ORS chapter 469 or any series therein by legislative action. See Preface to Oregon Revised Statutes for further explanation.

469.585 Activities of state related to selection of high-level radioactive waste disposal site. In order to achieve complete compliance with federal law and protect the health, safety, and welfare of the people of the State of Oregon, the Legislative Assembly, other statewide officials, and state agencies shall use all legal means necessary to:

- (1) Suspend the preliminary site selection process for a high-level nuclear waste repository, including the process of site characterization, until there is compliance with the intent of the Nuclear Waste Policy Act;
- (2) Reverse the Secretary of Energy's decision to postpone indefinitely all site specific work on locating and developing an eastern repository for high-level nuclear waste;
- (3) Insist that the United States Department of Energy's site selection process, when resumed, considers all acceptable geologic media and results in safe, scientifically justified and regionally and geographically equitable high-level nuclear waste disposal;
- (4) Demand that federal budget actions fully and completely follow the intent of the Nuclear Waste Policy Act;
- (5) Continue to pursue alliances with other states and interested parties, particularly with Pacific Northwest Governors, legislatures, and other parties, affected by the site selection process and transportation of high-level nuclear waste; and
- (6) Ensure that Oregon, because of its close geographic and geologic proximity to the proposed Hanford Nuclear Reservation site, be accorded the same status under federal law as a state in which a high-level nuclear repository is proposed to be located. [1987 c.13 §2; 2001 c.104 §212]

Note: See note under 469.584.

From: Ian Zabarte
Sent: Friday, March 4, 2022 12:11 PM
To: Consent Based Siting
CC: Joe Kennedy
Subject: [EXTERNAL] RFI: Consent-Based Siting and Federal Interim Storage

This is a response to the Department of Energy Request for Additional Information on consent based siting of nuclear waste facilities. My comments are provided as Secretary of the Native Community Action Council and as an appointee in 2017 to the United States Nuclear Regulatory Commission Licensing Support Network Advisory Review Panel. The Native Community Action Council is a party with standing in Yucca Mountain Licensing as a deep geologic repository with the only contention of ownership of Yucca Mountain in NRC Docket 63-001. The Native Community Action Council has provided input in 2015 and 2017 and believes the current approach by DOE is fatally flawed and should immediately stop.

Area 1: Consent-Based Siting Process

1. How should the Department build considerations of social equity and environmental justice into a consent-based siting process?

Consultation is not consent but when done, should be according to the UN Declaration on the Rights of Indigenous People with free, prior informed consent of Indigenous people affected--a right of self-determination, and in the planning and implementation of projects on our lands defined by treaty, or other constructive agreements with states. The law needs to be enforced and resources directed to indigenous communities for clean-up efforts and proper enforcement.

The siting process for an interim storage facility has already failed the Shoshone people by NRC licensing an interim storage facility in Texas based upon the final licensing of Yucca Mountain on Shoshone property. Yucca Mountain is illegal and will not be licensed in spite of abuse by coordinate agencies of the US government supporting the nuclear industrial complex. The Yucca Mountain is unconstitutional under the terms of peace and friendship because shipping nuclear waste then storing nuclear waste on Shoshone property without Shoshone consent is racism. Congress by proposing Shoshone property under the Nuclear Waste Policy Amendments Act of 1987 in violation of the Treaty of Ruby Valley is legislative malfeasance and Congressional malpractice by designating Yucca Mountain as the sole site for investigation and licensing as a deep geological repository.

2. What role should Tribal, State, and local governments and officials play in determining consent for a community to host a federal interim storage facility?

The role of victim has already been selected for the Western SHoshone at Yucca Mountain by the DOE and coordinate agencies failing to follow the law, the US Constitution Article 6, treaty supremacy clause and the Treaty of Ruby Valley (18 Statute 689-692. The intent of the DOE and coordinate agencies is to inflict conditions intended to bring about the destruction of the SHoshone people in whole or in part, a peremptory norm in International Law and a violation of 18 USC 1091 GENOCIDE. DOE and coordinate agencies must address the facts of law that the Treaty of Ruby Valley is in full force and effect and thereby controlling the siting of Yucca Mountain as illegal. The NRC must come into line with that fact of treaty laws of the US in the licensing of any interim storage facility for nuclear waste.

3. What benefits or opportunities could encourage local, State, and Tribal governments to consider engaging with the Department as it works to identify federal interim storage sites?

Acknowledging the facts of law in the US Constitution Article 6 treaty supremacy and the Treaty of Ruby Valley (18 Statute 689) and the President establishing a safe place for the protection, growth and development of the Western Bands of the Shoshone Nation of Indians under article 6 of the treaty. The State of Nevada and Nye County have been engaged in defrauding the SHoshone people of our rights, title and interests that should accrue to the benefit of the Western Bands of the Shoshone Nation of Indians. Federal funds from grants and payments equal to taxes a provided by federal law to Nevada for federal projects on Shoshone treaty property are distributed to all units of local government except iIndians. That is environmental racism, discrimination and fraud under 18 USC ss 1961-68 RICO.

Area 2: Removing Barriers to Meaningful Participation

Acknowledging the facts of law in the US Constitution Article 6 treaty supremacy and the Treaty of Ruby Valley (18 Statute 689) and the President establishing a safe place for the protection, growth and development of the Western Bands of the Shoshone Nation of Indians under article 6 of the treaty. The State of Nevada and Nye County have been engaged in defrauding the SHoshone people of our rights, title and interests that should accrue to the benefit of the Western Bands of the Shoshone Nation of Indians. Federal funds from grants and payments equal to taxes a provided by federal law to Nevada for federal projects on Shoshone treaty property are distributed to all units of local government except iIndians. That is environmental racism, discrimination and fraud under 18 USC ss 1961-68 RICO.

Area 3: Interim Storage as Part of a Waste Management System

The siting process for an interim storage facility has already failed the Shoshone people by NRC licensing an interim storage facility in Texas based upon the final licensing of Yucca Mountain on Shoshone property. Yucca Mountain is illegal and will not be licensed in spite of abuse by coordinate agencies of the US government supporting the nuclear industrial complex. The Yucca Mountain is unconstitutional under the terms of peace and friendship because shipping nuclear waste then storing nuclear waste on Shoshone property without Shoshone consent is racism. Congress by proposing Shoshone property in violation of the Treaty of Ruby Valley is legislative malfeasance and Congressional malpractice by designating Yucca Mountain as the sole site for investigation and licensing as a deep geological repository.

4. What are barriers or impediments to successful siting of federal interim storage facilities using a consent-based process and how could they be addressed?

Failure to protect and defend the US Constitution and treaties made pursuant to the Constitution including Indian treaties then interfering with the rights of the SHoshone people to free enjoyment of our property defined by the Treaty of Ruby Valley (Consolidated Treaty Series Volume 127 1863.

5. How should the Department work with local communities to establish reasonable expectations and plans concerning the duration of storage at federal interim storage facilities?

First implement health surveys for baseline studies, registration, surveillance, and monitoring of individuals. Origin is important so health-care must be include indigenous people.

6. What organizations or communities should the Department consider partnering with to develop a consent-based approach to siting?

Contact the Secretary of the Interior to stop the abuse of the Shoshone Nation, create the treaty reservation to correct the past abuse by the Department of Energy and prevent future abuse. Since the Secretary of the Interior claims superintendence of Indians according to the US Supreme Court's Marshall trilogy, Johnson v. MacKintosh, Worcester v. Georgia and US v. Cherokee Nation--Indians cannot consent and it is the US that is wholly responsible for the outcomes of the DOE policy or licensing by coordinate agencies of Yucca Mountain and Texas or any other site considered as an interim storage facility predicated upon illegally licensing Shoshone treaty property as in Yucca Mountain NRC Docket 63-001.

7. What other issues, including those raised in the *Draft Consent-Based Siting Process* ([www.energy.gov/sites/prod/files/2017/01/f34/Draft Consent-Based Siting Process and Siting Considerations.pdf](http://www.energy.gov/sites/prod/files/2017/01/f34/Draft%20Consent-Based%20Siting%20Process%20and%20Siting%20Considerations.pdf)), should the Department consider in implementing a consent-based siting process?

The DOE should consider the seriousness of acts violating the basic human rights of the Shoshone people including genocide for which there is no statute of limitation under 18 USC 1091, 2340, 2340A, 2441, and 2442 inclusive and end the consent based siting process under penalty of law.

Sincerely,

Ian Zabarte, Secretary
Native Community Action Council

This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.

From: Andy Zalay

Sent: Friday, January 28, 2022 1:15 PM

To: Consent Based Siting

Subject: [EXTERNAL] Request for form to testify for RFI 86 FR86244 Consent Based Siting to Identify Federal Interim storage to

Attachments: Jan 28 WSJ Letter to the Editor Paul A. Gigot.docx; Dec 3, 2019 SSWEET Presentation .pdf; final N-088156POD 6212010.pdf

Jan 28 Hello Alisa Trunzo:

Please find request for DOE from in support of making a testimony for above RFI , Area 1 Consent siting , Items 1-5.

I left you a voice mail today and am following up with this email.

The following questions come to mind;

Q1) YMP

why not use YMP for storage (see attached BLM application final N-088156POD)?

Q2) DESALINATION

why not use SONGS water inlet for desalination (see attached Dec 3 SSWEET presentation)?

Q3) FLOATING OFFSHORE WIND/ SMALL MODULAR REACTORS

why not issue RFP for FOSW/SMR concept (see Jan 28 WSJ letter)?

Thank you for your help.

Kind Regards,

Andy



This message does not originate from a known Department of Energy email system.
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Jan 28, 2022, Hello WSJ Editor Paul A. Gigot, Editorial Page

Andrew Desider Zalay, P.E.



The Jan 27 letter to the editor ***“If you Want Clean Power, Go Fission”*** by Robert Hargraves from the ThorCon Nuclear Engineering Company/ Dartmouth College points out the safety record of nuclear plants.

What is missing is the opportunity/need for nuclear plants based on; a) the retirement/decommissioning of US nuclear plants; b) moratorium on new US plants pending the completion of the permanent spent fuel rod repository at Yucca Mountain Plant (YMP); and c) a 1st cut order of magnitude analysis.

The missing Link is the opportunity/need for floating offshore wind (FOSW) backed up by small modular reactors (SMRs) to meet California’s 100% renewable goal by 2045 per AB100;
CA ELECTRIC UTILITY DEMAND
-277,704 GWh per 2019 CEC report (**31.7 GW** power demand/hr.)
CA ELECTRIC CAR (EV) DEMAND
-15.1 million cars 2018; 15.1 billion gallons gasoline sold; 120,000 BTU/gal gasoline; 531,00 GWh for 100% EVs vs gas cars
(**60GW** PV electric demand to replace gas powered cars)
TOTAL CLEAN POWER DEMAND (UTILITY+EV)
91.7GW

OPTIONS TO MEET DEMAND -Footprint NEI 7/9/2015 report

- PV SOLAR FOOTPRINT
-23,932 Sq mi (14% CA’s total land)

- LAND BASED WIND FOOTPRINT
-667,399 Sq mi (405% CA's total land)
- FLOATING OCEAN WIND/ NUCLEAR FOOTPRINT
-TO BE DEFINED

Based on above data, floating offshore wind (FOSW) backed up by small modular reactors (SMRs) located in Federal waters can provide the missing link to meet the 2045 energy challenge and reduce rolling blackouts and mitigate the drought (solve the water /energy nexus by powering CA's new desalination plants)?

Secure Stand-Alone Water Energy Emergency and Transport Project (SSWEET)



Presentation to Moulton Niguel Water District

Water for West™ (WfW) management team....

- **Andy Zalay** Mr Zalay is President of Water for West™ organization committed to developing practical, innovative and meaningful solutions to the water/energy shortage facing the Colorado Basin (so called “water/energy nexus”) by means of sea water desalination based on the following experience;
- Served as Owner’s Representative to build the 140.7MW Capital Wind farm to supply 250,000MWh/yr. of renewable energy for the City of Sydney desalination project.
- Assembled team for Water for West™ Project for Lower Colorado Basin to supply 4 million acre feet of fresh water using deep water desalination along the Pacific Coast
- Over a span of 30 years, he was responsible for the development, installation and operation of over 2,000 MW of independent power projects in the United States and Australia.
- He is a Registered Professional Mechanical Engineer (PE) in California and holds an MBA from Alabama A&M University and an M.S. and B.S. in Aeronautical Engineering from Massachusetts Institute of Technology.

Elgin Johnson- Ms. Johnson is Director of Development and co-founder of Water for West™ Project with 25 years/over \$300 million of completed transactions as a licensed California real estate agent.

SSWEET Consortium Members

Water Agency- (to be named); water purchase agreement

Electric Utility- SCE; power purchase agreement; access to SONGS inlet/discharge pipes; interconnect agreement to 500kW SONGS substation

Gas Utility- Sempra; gas supply

Plant Owner/Operator- to be named

Lead Consultant- GEI

Plant Equipment Supplier- to be named

Water conveyance/ gas pipe contractor- WR Rasic Const.

Site control- Camp Pedleton USMC; Caltrans; others

Contents

- I. Why Water for West™?
- II. Why SSWEET™ Project?
- III. Project Summary
- IV. Preliminary engineering
- V. Development timeline
- VI. Conclusions and proposed way forward

I. Why WfW?

1. **WATER/ENERGY NEXUS: WATER SUPPLY SHORTAGE**

- Colorado River Basin Study shows 3MAF to 4MAF shortfall fresh water by 2030
- LA Basin water supply plan projects 170,000 new water customers annually
- Opportunity to expand finite water shed Colorado River Basin to infinite Pacific Ocean

2. **WATER/ENERGY NEXUS: SHORTAGE OF ELECTRICITY**

- Decommissioning of 2.1GW San Onofre Nuclear Generating System (SONGS)
- Decommissioning of 1.8GW of fossil fuel plants with once through cooling
- Southern California Edison Request for Offers for Local Capacity Requirement (SCE LCR).
- Opportunity for 1GW gas-fired base-load plant at SONGS with 50MGD desalination cogeneration plant

3. **DECOMMISSIONING OF SONGS**

- Decommissioning of inlet/discharge structures
- Inlet/discharge structures suitable for 50MGD desalination plant

4. **WfW HAS ASSEMBLED THE “BEST BET/LOWEST COST SOLUTION” TO MEET WATER/ENERGY NEXUS**

Ila. Why SSWEET Project? 50MGD SECURE WATER

THERMAL DESALINATION

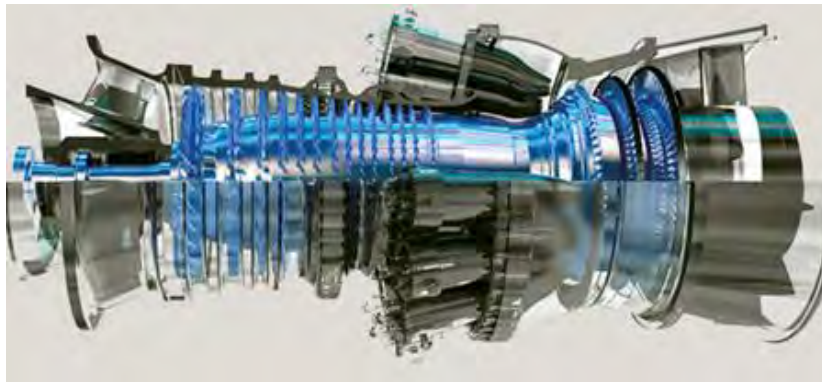
- Most drinking water in Saudi Arabia is generated by thermal desalination (~1MAF)
- Thermal desalination technology recovers rejected heat from generating plant
 - a) Multi Stage Flash Desalination (MSF)- 12 plants
 - b) Multi-Effect Desalination (MED)- 7 plants
- Benefits of thermal desalination over RO (8 plants);
 - *Lowest water cost
 - *No brine discharge (constant circulation)
 - *No fouling/chemical backwash



SSWEET is “Least Cost Best Fit” 50MGD solution to meet water supply plans

IIb. Why SSWEET™ Project? 1GW Secure Power

1. The lowest cost, scalable, deliverable solution to respond to the SCE LCR needs.
 - * Power injection at SONGS; SONGS gen-set provides spinning reserve/Vars (via synchronous mode);
 - * SSWEET Project meets FCDS RAM needs (to be confirmed)
 - * Existing SONGS inlet/discharge pipes suitable for thermal desalination plant
 - * WfW has approached SCE for access to SONGS inlet/discharge pipes
2. Limited site opportunities for FCDS in SCE service territory (non attainment air shed)
3. Critical infrastructure to provide credible solution to water/energy nexus
 - Favorable permit review by Agencies and public (critical drinking water project)
 - Smallest environmental footprint (existing/permitted/disturbed site/lowest net emissions)
 - Two nearby water desalination projects under construction/approval



IIla. Project Summary - Overview

- A. 1GW gas-fired power plant next to SONGS
- B. Deliver 1GW real power to SONGS 500kV substation
- C. Salt water inlet/discharge pipe at SONGS feeding 50MGD thermal desalination plant
- D. 50MGD fresh water conveyance along Interstate I5 (to host Water Agency)
- E. Apply for Right of Way (ROW) Grant from CALTRANS/ Camp Pendleton Marine Corp Base
- F. Apply to USACE and CEC as the joint lead permit agency



SSWEET will deploy proven reliable heavy duty gas turbines with proven MSF / MED desalination technology to meet public benefit for secure fresh water / energy needs

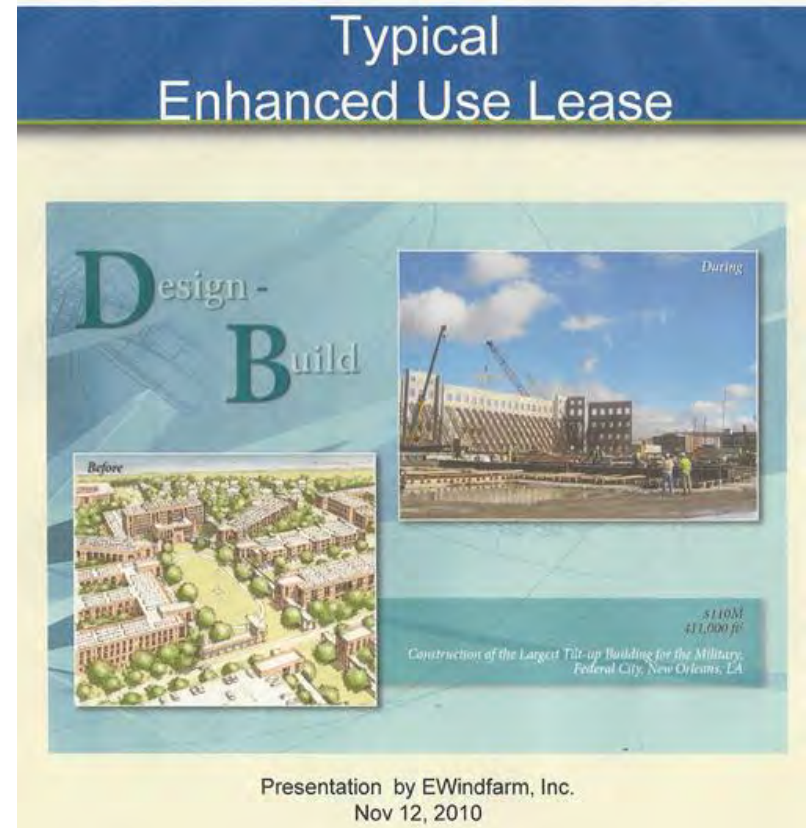
IIIb. Project Summary - Current Status

Permitting

1. Selected the best site to meet the needs of SCE and water agencies
 - Performed an exhaustive review of all potential Federal and State locations;
 - Met with stakeholders; have ongoing discussions with Agencies
2. Milestones; a) site control/public benefit/compliance SONGS closure plan/enhanced use lease; b) lead agency determination (USACE/CEC); c) CEQA/NEPA permit; d) Coastal Zone permit; e) Cultural Resource permit; f) CWA permit Sec 10, 404; g) other permits

Design and EPC

1. Top-tier equipment vendors / engineers / heavy contractors identified for Project.
2. Initial cost projections (to be provided)
3. Proven components; reliable gas fired turbines; cost effective MSF/MED equipment



IIlc. Project Summary - Team (proposed)

CONSORTIUM MEMBERS

- to be provided

EQUIPMENT SUPPLIER

- Gas Turbine; to be provided
- MSF/MED Desalination Plant
- Other; to be provided

CONSULTANT/DESIGNER

- GEI

EPC CONTRACTOR

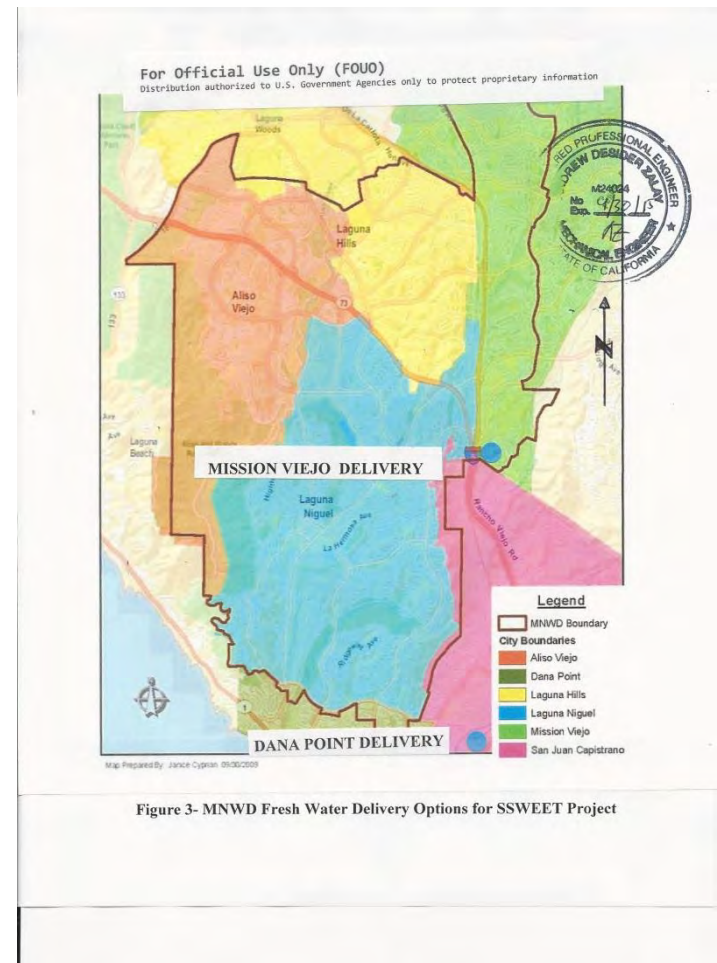
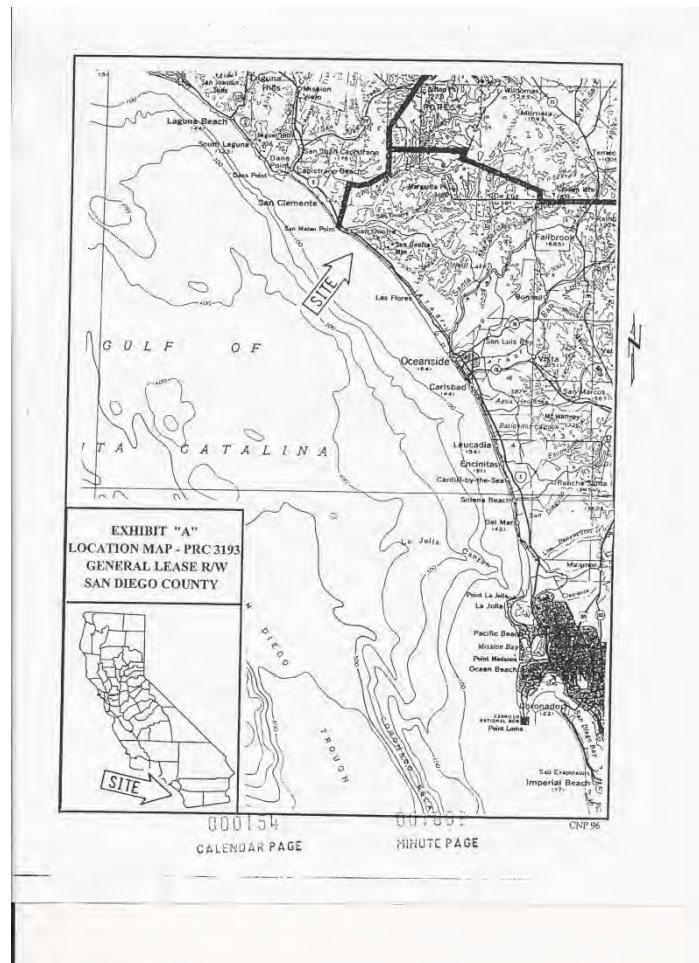
- to be provided
- WR Rasic subcontractor



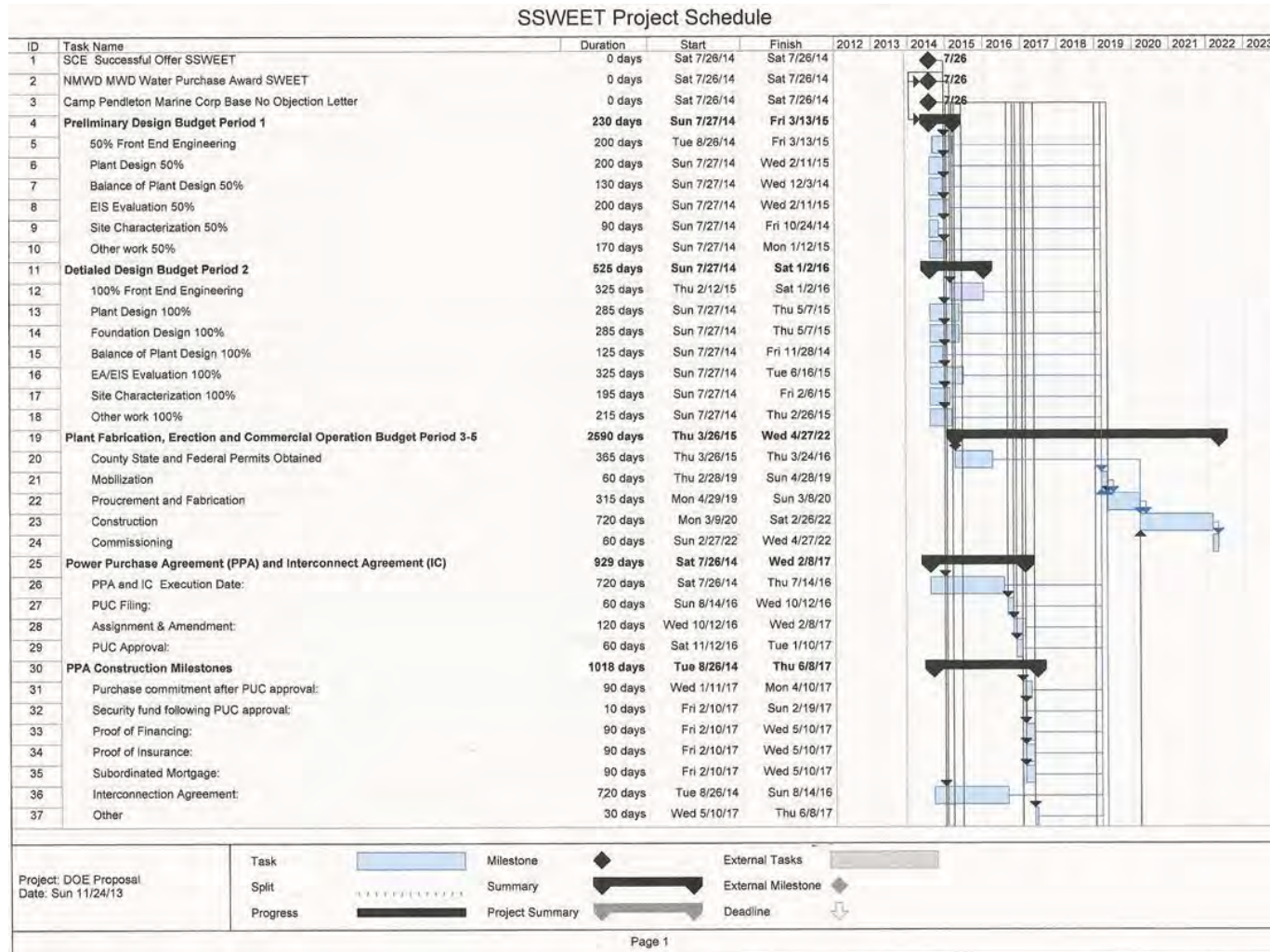
IIId. Project Summary - Team GEI

IIIe. Project Summary - Team WR Rasic

IV. Preliminary Engineering (to be provided)

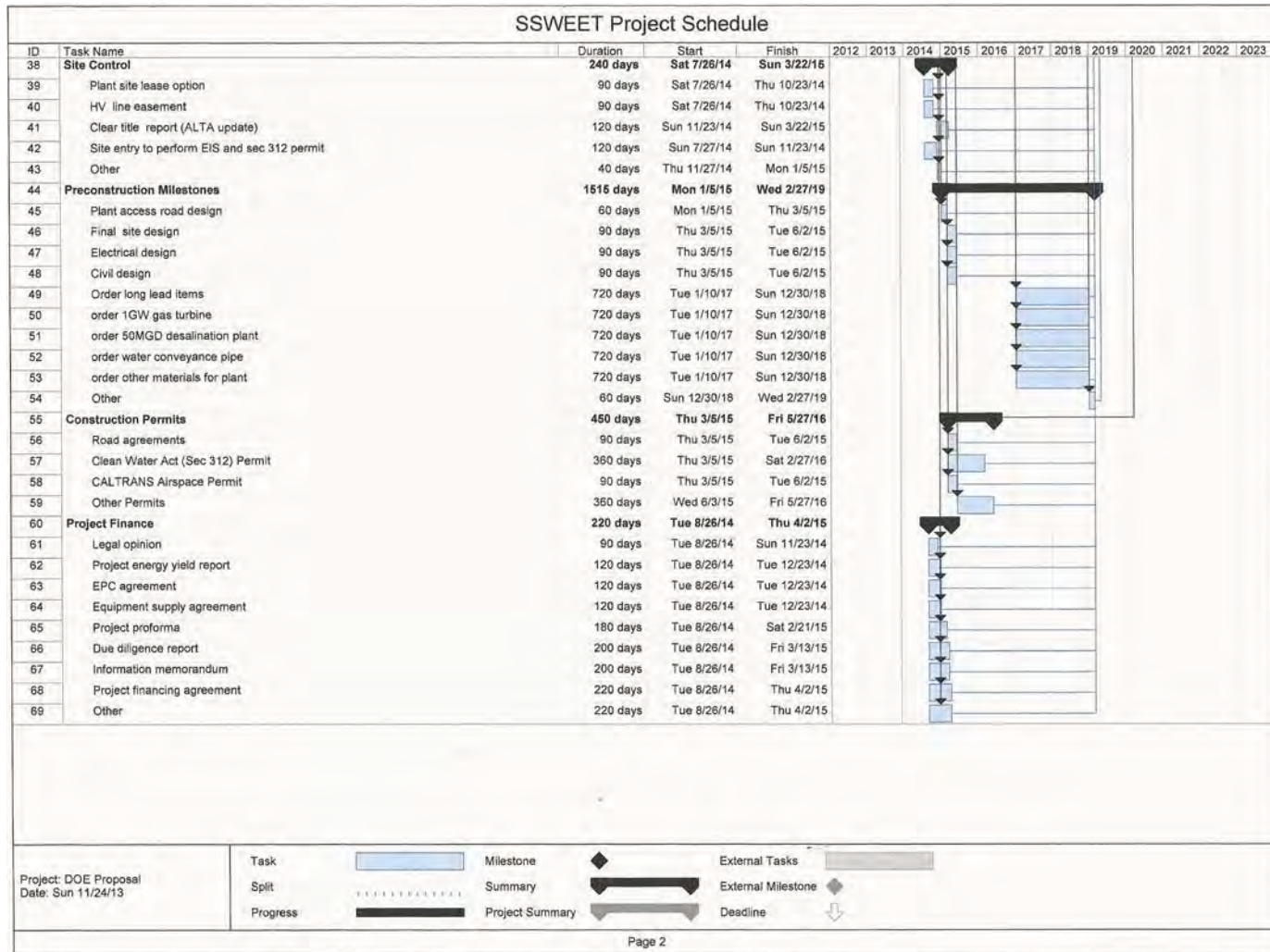


V. Development Timeline- 2014 start



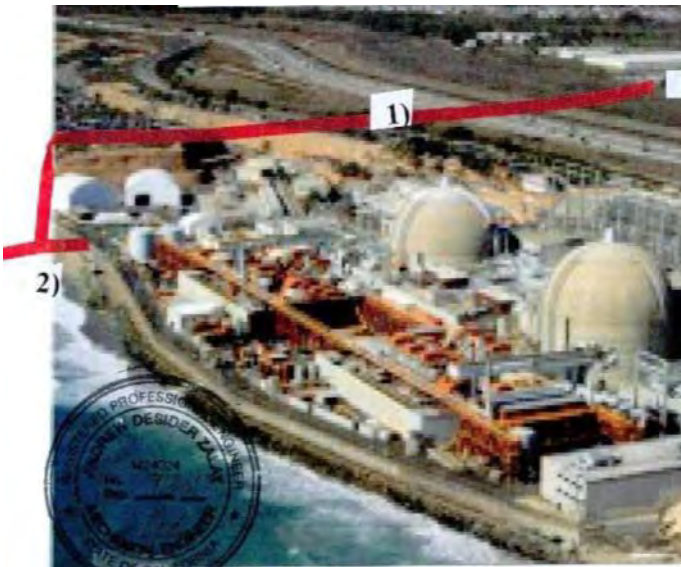
Start of Project feasibility study in 2014 is a credible goal

V. Development Timeline- concluded



Target 2022 Commercial Operation Date (COD) for a critical water/energy infrastructure is a worthy goal

VIII. Conclusion – Benefits to Moulton Niguel Water District (MNWD)



How best to support MNWD's water supply plan?

Plan of Development: Energy Park at Yucca Mtn Project N-088156



Prepared For:

BLM Las Vegas Field Office
4701 North Torrey Pine
Las Vegas, NV 89130

Prepared By:

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Laguna Niguel, CA
92677

Westinghouse Electric Company, LLC
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Cranberry Township, PA
16066

Shaw Nuclear Services, Inc
128 South Tryon Street
Charlotte, NC
28202

June 28, 2010 (Rev 0)

SOLAR ENERGY PLAN OF DEVELOPMENT

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TITLE PAGE
PLAN OF DEVELOPMENT: ENERGY PARK AT YUCCA MTN

ROW Grant N-088156
(Amargosa Valley Basin) Renewable Energy Project
including Solar Energy Component and Nuclear Energy Component

BLM OFFICE:	Las Vegas Field Office 4701 North Torrey Pine Las Vegas, NV 89130
LEASE/CASE FILE/PROJECT #:	R/W Grant N-088156
LOCATION OF PROPOSED ACTION:	46.400 acres over 8 sections including, T. 12S, R.48E, T. 14S, R.50E, T. 15S, R.50E, T. 15S, R.50W, T. 15S, R.49E, T. 14S, R.50E, T. 14S, and R.51E, T. 13S, R.50 (see Table 2 and Figure 1- AAA)
USGS TOPOGRAPHIC MAP:	1) Crater Flat 7.5" Quadrangle, NV 2) Striped Hills 7.5" Quadrangle, NV 3) Jackass Flats 7.5" Quadrangle, NV 4) Busted Butte 7.5" Quadrangle, NV
APPLICANT/PROPONENT:	EWindfarm, Inc 30672 Via Estoril Laguna Niguel, CA 92677 And Others to be named
DATE:	Jun 28, 2010

ACRONYM LIST

AF/YR	Acre-Feet per Year
BLM	Bureau of Land Management
Burec	Bureau of Reclamation
CSP	Concentrating Solar
CPRMP	Cultural/Paleo Resource Management Plan
DoD	US Department of Defense
DOE	US Department of Energy
DWR	Division of Water Resources
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EWind	Proponent
FHA	Federal Highway Administration
HSP	Health and Safety Plan
MSDS	Material Safety Data Sheet
MW	Mega Watt
NEPA	National Environmental Protection Act
NDOT	Nevada Department of Transportation
NRC	US Nuclear Regulatory Commission
NRS	Nevada Revised Statutes
NTS	DOE Nuclear Test Site
OHV	Off-Highway Motor Vehicle
O&M	Operation and Maintenance
PLC	Power line carrier (utility communication system)
PM10	Particulate with a Diameter Less than 10 Microns
PPA	Power Purchase Agreement
Project	12.6 GW commercial Energy Park including 6GW Solar Component and 6.6 GW AP1000 Nuclear Component (or equivalent) and all related equipment
Proponent	EWindfarm, Inc. or EWind and its associates
POD	Plan of Development
PV	Photovoltaic
RMP	Resource Management Plan
ROD	Record of Decision
ROW	Right of Way
R&PP	Recreation and Public Purpose Act
RV	Recreational Vehicle
SPCP	Spill Prevention and Containment Plan
SWPPP	Storm Water Pollution Prevention Plan
UEPA	Utility Environmental Protection Act
USACE	US Army Corp of Engineers
USDA	US Department of Agriculture
USGS	US Geological Survey
VEA	Valley Electric Association
VRM	Visual Resource Management Plan

YMP

Yucca Mtn waste depository site
(no longer designated as a waste depository)

FOREWORD

The objective of this POD is to provide BLM with necessary information to evaluate this permit application for compliance with BLM's regulatory framework and to enable the BLM develop a work plan for the subsequent environmental review assessment, and approval process.

With respect to the BLM regulatory framework, the following chronological summary is given;

This POD is being submitted by Proponent to BLM Las Vegas District in support of ROW application N-088156 as requested by BLM per Decision letter from Mark Chandler of May 26, 2010 (Ref 1) containing Bill for Collection N-088156, Cost Reimbursement Agreement and Form 1842-1, all of which were executed and returned to BLM and \$50,000.00 payment was made by proponent concurrently with this POD submittal.

EXECUTIVE SUMMARY

As described in this POD, the Proponent has conducted a preliminary desktop investigation of the Project site to establish feasibility for the planning, permitting, design, construction and operation of a commercial solar generating plant. As a result of this work, proponent has found a combination a PV system (Solar Component) and of nuclear plant (Nuclear Component) to be the most suitable technology for this site with the least environmental impact because of the following factors;

Solar Component

- No water required for cooling (only occasional washing of panels by water truck)
- No chemical used for cooling, lubrication, or other purposes (solid state panels)
- No natural gas or diesel fuel required
- No steam boilers and steam turbine generators, or other systems for auxiliary power
- Direct conversion of electricity from PV panels to utility substation/ existing transmission line across site
- Less visual impact (PV panels low to ground, conventional substation is tallest structure)

Nuclear Component

- Reclaimed water is available on-site for plant cooling (to be confirmed; Tritium contaminated unallocated surface waters plan to be reclaimed for Project as part of DOE Energy Park concept, See Exhibit 1)
- Power supply required for fresh water desalination plant needs to be base load renewable generation with secure uninterruptible 24/7 supply (total GW demand to be confirmed by Burec Colorado River study, See Exhibit 2).
- Preliminary site suitability for nuclear plant is demonstrated (see Exhibit 3)

While we have not found any fatal flaws that would stop the project or require modifications of the footprint, we look forward to working with the BLM and other stakeholders to begin the consultation process address any and all concerns and progress this Project to an ROW and ROD to the benefit of the BLM, the local community and the public.

1.0 PROJECT DESCRIPTION:

This BLM ROW grant is to allow for the installation and operation of an up to 6GW capacity solar project (Solar Component) and up to an 8GW nuclear project (Nuclear Component) (collectively the Project or Energy Park). The “Energy Park” is a term coined by DOE wherein a brown-field contaminated DOE site (such as Yucca Mtn) is reclaimed to provide renewable energy by means of a Nuclear Component and Solar Component (see Exhibit 2). The Project will be interconnected to the existing and new transmission lines that run across the property and are planned for the Amargosa Valley (Solar Express line, see Exhibit 4).

Solar Component

The main components of this project include PV solar collectors, inverters, 34.5kV collection system, 34.5kV/138kV/230kV/500kV substation, access roads, O&M building and related facilities.

Nuclear Component

The main components of this project include up to six (6) AP1000TM nuclear plants (or equivalent) containing a Nuclear Power Block with nuclear steam supply system (i.e., nuclear containment vessel with pressurizer, reactor, steam generator, turbine, condenser, generator, and associated equipment and 500kV/750kV substation, access roads, O&M building and related facilities.

This ROW Project application is submitted in accordance with Section 202 of the Federal Land Policy Management Act of 1976. The BLM is mandated to develop land use plans, with public input, that designate and allocate use of the public lands. Title 43, Code of Federal Regulations, Part 1610.5-3 requires that all subsequent management actions conform to the approved land use plans. The approved land use plan for the public lands involving this project is the BLM Las Vegas District Bureau of Land Management Plan per USDA/BLM map of 1997. The Plan seeks to balance multiple use, sustained yield, and overall environmental quality in management of the involved public lands. The public lands within and in the overall vicinity of this proposal are designated as unclassified under the Plan. Unclassified lands are managed on a case-by-case basis. Leases and permits may be considered on these lands if an economically sound proposal can be developed that is determined to be in the public interest.

a. Introduction

i) Type of facility, planned uses, generation output

Type of Facility

Proponent has submitted an application for the installation and operation of a commercial Energy Park including solar generating facility and nuclear electric generating facility (Project) on public lands for a period of thirty (30) years and forty (40) years for each of the 6x AP1000 plants (or equivalent) to coincide with the NRC 40 year license. The purpose of the application is to install and operate a commercial electric generating facility based on well-established technology including combination of Solar Component and Nuclear Component.

A. Solar Component

PV flat plate solar technology was selected consisting of 120 x 16.67 MW clusters (2MW total

capacity at each of the three (3) sites as shown in Figure 1. Proponent has selected the PV technology for this site because it minimizes the environmental impacts based on a comparison with other solar-based technologies, such as CSP units (e.g. power towers or solar troughs). PV technology requires less soil disturbance, utilizes less water, hazardous materials and fluids, and demonstrates less visual impact as summarized in Table 1. As such, it is the most suitable solar-based technology for the BLM Johnnie Pahrump Project.

Each 2GW Phase includes multiple fields of PV solar panels which convert sunlight directly to electricity without mechanical conversion and without use of water or heat transfer fluid (HTF). The solar fields are arranged in 16.67MW clusters (each on a 34.5kV feeder) consisting of eight-to-ten 2 MW Arrays. Each 2 MW Array consists of 16 x 125kW sub-arrays, where each 125kW sub-array is comprised of 42 strings of solar panels as shown in Figure 4. Each 2 MW array has an overall footprint of 200 ft x 175 ft, which includes a collector surface of 13,000 square feet as shown in Figure 3. Unlike CSP type systems, which require the whole site to be graded to within 2% grade; the PV solar collector only requires that each of 200 ft x 175 ft Arrays be graded as flat areas (2% grade). As a result, the natural contours of the property remain unaffected (the site is effectively terraced). An access road runs through the arrays to provide access for periodic washing with water provided from a 1,000-gallon water truck, as well as vehicle access for periodic inspection. Wash water will be stored in an on-site 10,000-gallon water storage tank. The 10,000-gallon water storage tank may also serve as a reserve for fire protection use. The water usage for a PV system is only a few percent of the water usage required for other conventional solar thermal systems (see Table 1).

Table 1 - Comparison of Solar Power Technologies (100MW Net Output)

	Parabolic Trough (CSP)	Power Tower (CSP)	Photo Voltaic (PV)
Major Components	Parabolic mirrors on tracking style mounting system; Heat Collector Elements (HCE); Transfer fluid pumps; Steam Generator; Steam Turbine; Condenser	Heliostats on tracking style mounting system; Tower mounted solar concentrator; Transfer fluid pumps and storage tanks; Steam Generator; Steam Turbine; Condenser	Solid State photo Voltaic panels (PV); Tracking style mounting system; Inverters; Pad-mounted transformers; Underground electrical collection system
Energy Transfer Medium	Synthetic Oils (Therminol)	Molten Salt or Water/Steam	None
Structure Height (Ft.)	15-30	200-300	6-12
Water Usage and Discharge (Gallons/day)	<u>Usage</u> Wet Cooling 250,000-950,000 Dry Cooling 12,000-45,000 <u>Discharge</u>	<u>Usage</u> Wet Cooling 250,000-950,000 Dry Cooling 12,000-45,000 <u>Discharge</u>	Less than 725 gal/day based on 4 oz/panel using squeegee and water spray

	Wet Cooling 18,000-76,000 Dry Cooling 12,000-45,000	Wet Cooling 18,000-76,000 Dry Cooling 12,000-45,000	
Fuel Requirements	Fossil fuel typically utilized during start-up, periods of cloud shadows and for maintaining transfer fluid temperatures when shut down	Fossil fuel may be utilized during start-up period and for maintaining transfer fluid temperatures when shut down	None
Working Fluid Temperature (deg F)	750	1050	None
Grading Requirements	1 to 2 % slope for large sections and collection fields larger than 100 acres	1 to 2 % slope for each heliostat fields larger than 250 acres	1 to 2 % slope for each sub-array fields less than 1 acre
Obstruction Lighting Requirements	Obstruction lighting for required for plant in excess of 200ft height	Obstruction lighting for required for plant in excess of 200ft height	No obstruction lights (highest structure is substation which is less than 200ft in height)

Phased Development

The 2GW Solar Component at each of the three sites (Crater Flat, Striped Hills and Calico Hills) will be built in five (5) 400MW capacity phases to allow for gradual development of the land and to better meet the utility solar energy needs as the market develops. Each Phase is built in successive 12 month increments (see Table 6) and each phase is a stand-alone plant with same baseline plant design and engineering features as described below for the Crater Flat Site and the other two sites will follow the same plan in sequence. The 14,080 acre Crater Flat site, up to 92% of the site or 12,993 acres of land will be developed for the Solar Component and the other 8% (1,126 acres) will be developed for the Nuclear Component.

Phase 1 – 400MW PV Solar Plant (Site 1A-Crater Flat Site)

Up to 2,590 acres of land will be developed under Phase 1 with Feb 2015 grid connection date assuming July 2013 BLM approval (see Table 1S). The development would involve site improvements including preparation of level ground for each 2MW solar unit, construction of access roads, 34.5kV underground collection system, substation/interconnect/O&M building, and related improvements. The site will be accessed from Interstate Highway I95 via a dirt road with a bar gate and will be fenced in. The substation/interconnect/O&M building, and related improvements are shown in Fig 9. The development is shown in Fig 1A, 2, 3, 5, and 6 and the PV solar units are described in Appendix A and Phase 1 is summarized below.

Land Use Solar plant	Acreage Up to 2,590	Roadway 20 miles of Unimproved roads	Other Utility substation, interconnect, and O&M building
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Phase 2 – 400MW PV Solar Plant (Site 1A-Crater Flat Site)

Up to 2,590 acres of land will be developed under Phase 1 with Nov 2015 grid connection date assuming July 2013 BLM approval (see Table 1S). The development would involve site improvements including preparation of level ground for each 2MW solar unit, construction of access roads, 34.5kV underground collection system, substation/interconnect/O&M building, and related improvements. The site will be accessed from Interstate Highway I95 via a dirt road with a bar gate and will be fenced in. The substation/interconnect/O&M building, and related improvements are shown in Fig 9. The development is shown in Fig 1A, 2, 3, 5, and 6 and the PV solar units are described in Appendix A and Phase 1 is summarized below.

Land Use Solar plant	Acreage Up to 2,590	Roadway 20 miles of Unimproved roads	Other Utility substation, interconnect, and O&M building
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Phase 3 – 400MW PV Solar Plant (Site 1A-Crater Flat Site)

Up to 2,590 acres of land will be developed under Phase 1 with Aug 2016 grid connection date assuming July 2013 BLM approval (see Table 1S). The development would involve site improvements including preparation of level ground for each 2MW solar unit, construction of access roads, 34.5kV underground collection system, substation/interconnect/O&M building, and related improvements. The site will be accessed from Interstate Highway I95 via a dirt road with a bar gate and will be fenced in. The substation/interconnect/O&M building, and related improvements are shown in Fig 9. The development is shown in Fig 1A, 2, 3, 5, and 6 and the PV solar units are described in Appendix A and Phase 1 is summarized below.

Land Use Solar plant	Acreage Up to 2,590	Roadway 20 miles of Unimproved roads	Other Utility substation, interconnect, and O&M building
--------------------------------	-------------------------------	---	--

Phase 4 – 400MW PV Solar Plant (Site 1A-Crater Flat Site)

Up to 2,590 acres of land will be developed under Phase 1 with May 2017 grid connection date assuming July 2013 BLM approval (see Table 1S). The development would involve site improvements including preparation of level ground for each 2MW solar unit, construction of access roads, 34.5kV underground collection system, substation/interconnect/O&M building, and related improvements. The site will be accessed from Interstate Highway I95 via a dirt road with a bar gate and will be fenced in. The substation/interconnect/O&M building, and related improvements are shown in Fig 9. The development is shown in Fig 1A, 2, 3, 5, and 6 and the PV solar units are described in Appendix A and Phase 1 is summarized below.

Land Use Solar plant	Acreage Up to 2,590	Roadway 20 miles of Unimproved roads	Other Utility substation, interconnect, and O&M building
--------------------------------	-------------------------------	---	--

Phase 5 – 400MW PV Solar Plant (Site 1A-Crater Flat Site)

Up to 2,590 acres of land will be developed under Phase 1 with Feb 2018 grid connection date assuming July 2013 BLM approval (see Table 1S). The development would involve site improvements including preparation of level ground for each 2MW solar unit, construction of access roads, 34.5kV underground collection system, substation/interconnect/O&M building, and related improvements. The site will be accessed from Interstate Highway I95 via a dirt road with a bar gate and will be fenced in. The substation/interconnect/O&M building, and related improvements are shown in Fig 9. The development is shown in Fig 1A, 2, 3, 5, and 6 and the PV solar units are described in Appendix A and Phase 1 is summarized below.

Land Use Solar plant	Acreage Up to 2,590	Roadway 20 miles of Unimproved roads	Other Utility substation, interconnect, and O&M building
--------------------------------	-------------------------------	---	--

Planned Uses

The planned use is a commercial PV solar electric generating plant. The PV system begins to generate power each morning after sunrise until shutdown in the evenings. Occasionally, the passage of clouds will cause a decrease in production due to shadowing and once the cloud cover passes, and the sun is unobstructed, the plant will return to normal production.

Generation Output

The Project will have a nominal electrical output up to 2GW and a design capacity factor of 28%. The electricity generated by the Project will be provided to host water agencies on a long-term committed basis to assist them meet their renewable supply requirements and to operate desalination plants on the Pacific Coast to provide a new source of fresh water to Nevada, California and Arizona and to relieve the drawdown on Lake Mead so it can be restored to its design operating levels in the face of anticipated potential climate change and drought conditions.

Unlike other solar technologies, this PV Project will not require an auxiliary source of water or fuel to produce power as commonly required with CSP systems. CSP systems generally require a supplemental boiler, typically fueled by natural gas or diesel oil, to reduce the startup time, ride through periods of reduced sunlight, and to keep the plant systems at operating temperature of the specific fluids that are used in its process.

PV flat plate solar technology was selected consisting of 120 x 16.67 MW clusters (2MW total capacity at each of the three (3) sites as shown in Figure 1. Proponent has selected the PV technology for this site because it minimizes the environmental impacts based on a comparison with other solar-based technologies, such as CSP units (e.g. power towers or solar troughs). PV

technology requires less soil disturbance, utilizes less water, hazardous materials and fluids, and demonstrates less visual impact as summarized in Table 1. As such, it is the most suitable solar-based technology for the BLM Johnnie Pahrump Project.

B. Nuclear Component

The Nuclear Component includes 2 x 1.1GW (initial total project capacity of 6.6GW nuclear power plants at each of the three sites (Crater Flat, Striped Hills and Calico Hills). The AP1000TM plants will use nuclear fuel to generate electricity by means of steam and mechanical conversion in a turbine. The nuclear plants are arranged in pairs at the centroid of each of the sites. Each AP1000 (or equivalent) requires an exclusion zone of 400 to 2,000 acres for security (see Fig 1).

Phased Development

The initial 6.6GW Project will be built in six 1.1GW capacity phases to allow for gradual development of the land and to better meet the utility nuclear energy needs as the market develops. Each Phase includes the construction of two (2) nuclear units built in 48 month increments (see Table 6) which can be staged with one year intervals to optimize resources. Each phase includes two (2) stand-alone nuclear power plants with same baseline plant design and engineering features as summarized below.

Table 1N- Summary of Nuclear Component Development Milestone Schedule

Scope of Work: 6 x 1.1GW AP 1000TM units; first plant Unit A, Site N-1 (Crater Flat; Last plant Unit F, Site N-6 (Calico Hills),

Task 1.0 Establishment of Land Usage, Transmission/Interconnection, DOE NTS and Off-take Agreements (2010-2012)

2010

- Complete BLM POD Review for ROW Application 5101ER LLNVS-B-Nuclear Component; 6 x 1GW to 2GW nuclear plants; up to 8GW total capacity
- Obtain Option from ReTco for transfer capacity on the Solar Express Line; start in 2025 for Phase 1 - 1.5GW to 2.0 GW nuclear (Unit A, Site N-1)
- File unsolicited proposal with DOE NTS for Unit A, Site N-1 and subsequent plants up to 8GW total capacity
- Bid in Nuclear Component to 2010 Renewable Energy RFPs subject to approval of EIS and transmission interconnect

2011

- BLM secures no objection letter from DOE and DoD to permit withdrawn lands to be allocated to above ROW application
- Unit A, Site N-1 shortlisted by Renewable Energy RFPs for 1.5GW to 2GW off-take in 2025
- Unsolicited proposal accepted by DOE NTS for Unit A/ Site N-1 and subsequent sites

2012

- BLM approves EIS
- BLM Record of Decision (ROD) issued
- BLM Right of Way (ROW) executed by parties
- Execute Option from ReTco for transfer capacity on the Solar Express Line to CAISO starting in 2025 and increasing sequentially to 8GW total in 2045 as follows;

1.5GW to 2.0GW	Unit A	N-1 Plant	starting in 2025;
1.5GW to 2.0GW	Unit B	N-2 Plant	starting in 2029;
1.5GW to 2.0GW	Unit C	N-3 Plant	starting in 2033;
1.5GW to 2.0GW	Unit D	N-4 Plant	starting in 2037;
1.5GW to 2.0GW	Unit E	N-5 Plant	starting in 2041;
1.0GW to 1.5GW	Unit F	N-6 Plant	starting in 2045;

- File NRC applications for Unit A, Site N-1
- File interconnect CAISO application with ReTco
- Begin negotiations with WACC to handle up to 2 GW of generation by 2025

Task 2.0 Nuclear Regulatory Commission (NRC) Licensing (2012-2017)

2012

- File NRC license application for 1.5 to 2 GW Plant (Unit A/ Site N-1)
[expedited request with relaxed fence-line conditions using existing DOE site characterization form Yucca Mtn site]

2017

- NRC issues expedited approval

Task 3.0 Power Plant Design and Engineering Unit A, Site N-1 (2015-2019)

Task 4.0 Power Plant Construction, Unit A, Site N-1
(2017-2025)

Task 5.0 First Plant (Unit 1, Site N-1) placed into service (1.5 GW to 2GW total)
(2025)

[Subsequent Plants (Units 2-6, Sites N-2 to N-6) placed into service every 4 years with last plant in service in 2045 (8GWtotal)]

+
+
+

Task 6.0 Last Plant (Unit 6, Site N-6) placed into service (8GW total)
(2045)

Phase 1 – 2.2 GW from Two Unit AP 1000TM Nuclear Plant (Site 1A- Crater Flat)
Up to 250 acres of land (2% of the 14,080 acre site) (up to 2,000 acre including no build buffer zone) will be developed under Phase 1 as a Nuclear Component with Jan 2025 grid connection date assuming July 2013 BLM approval and Nov 2020 NRC approval (see Table 1N). The development would involve site improvements including preparation of level ground for each nuclear plant, construction of access roads, 500kV substation, interconnect, O&M building, and related improvements. The site will be accessed from interstate highway I95 via a paved road with a bar gate and will be fenced in. The substation/interconnect/O&M building, and related improvements are shown in Exhibit 3 and described as follows.

Land Use	Acreage	Roadway	Other
Nuclear electric generating plant (2 units)	Up to 250 (2,000 including no-build buffer zone)	10 miles of paved roads	Utility substation, interconnect, and O&M building

Phase 2 – 2.2GW from Two Unit AP1000TM Nuclear Plant (Site 1B- Striped Hills)
Up to 250 acres of land (1% of the 15,840 acre site) will be developed under Phase 2 as a Nuclear Component with Feb 2029 grid connection date assuming July, 2013 BLM approval and Nov, 2024 NRC approval. The development would involve site improvements including preparation of level ground for each nuclear plant, construction of access roads, 500kV substation, transmission interconnect, O&M building, and related improvements. The site will be accessed from interstate highway I95 via a paved road with a bar gate and will be fenced in. The substation/interconnect/O&M building, and related improvements are shown in Exhibit 3 and described as follows.

Land Use	Acreage	Roadway	Other
Nuclear electric generating plant (2 units)	Up to 250 (2,000 including no-build buffer zone)	12 miles of paved roads	Utility substation, interconnect, and O&M building

Phase 3 – 2.2GW from Two Unit Nuclear Plant (Site 1B- Calico Hills)

Up to 250 acres of land (1% of the 16,840 acre site) will be developed under Phase 3 as a Nuclear Component with May 2033 grid connection date assuming July, 2013 BLM approval and Nov, 2028 NRC approval (see Table 1N). The development would involve site improvements including preparation of level ground for each nuclear plant, construction of access roads, 500kV substation, interconnect, O&M building, and related improvements. The site will be accessed from interstate highway I95 via a paved road with a bar gate and will be fenced in. The paved road to Site 1B will be extended and used to access Site 1C. The site will be accessed from interstate highway I95 via a paved road with a bar gate and will be fenced in. The substation/interconnect/O&M building, and related improvements are shown in Exhibit 3 and described as follows;

Land Use	Acreage	Roadway	Other
Nuclear electric generating plant (2 units)	Up to 250 (2,000 including no-build buffer zone)	12 miles of paved roads	Utility substation, interconnect, and O&M building

Planned Uses

The planned use is a commercial nuclear electric generating plant. The nuclear system operates continuously except for periodic outages to change fuel rods (once every 18 months). After 5 or 10 years, certain parts will be changed out as part of the routine O&M and the plant will return to normal production.

Generation Output

The Project will have a nominal electrical output up to 6.6GW and a target capacity factor of 90% or better. The electricity generated by the Project will be provided to host water agencies on a long-term committed basis to assist them meet their renewable supply requirements and to operate desalination plants on the Pacific Coast to provide a new source of fresh water to Nevada, California and Arizona and to relieve the drawdown on Lake Mead so it can be restored to its design operating levels in the face of anticipated potential climate change and drought conditions.

ii) Schedule for project, including anticipated timelines for permitting, construction and operation, and any phased development as appropriate

Solar Component

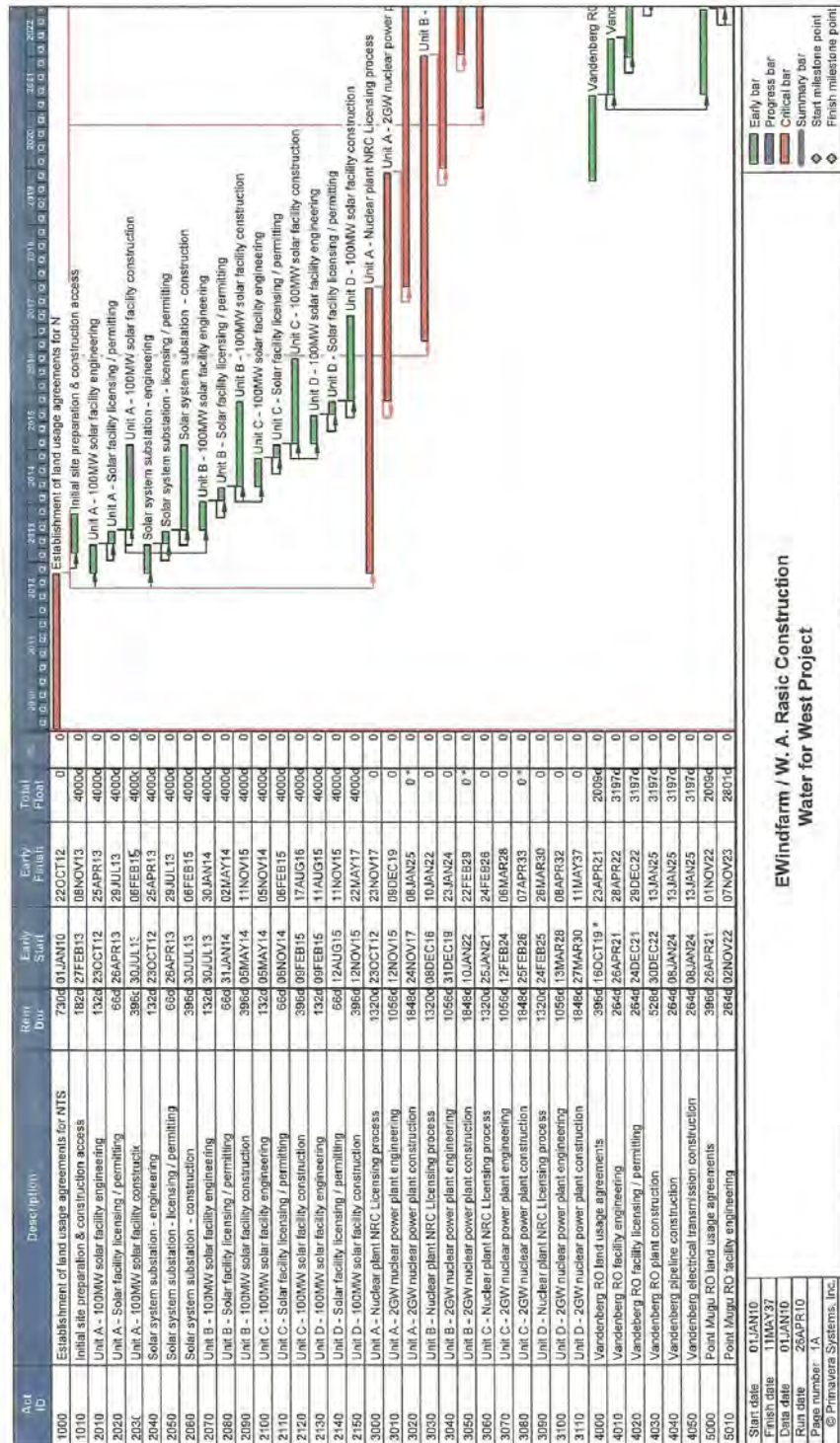
The commercial operation of the first 400MW phase at Site 1A-Crater Flat is planned to commence by the first quarter of 2015 subject to receipt of regulatory approval in Q1 2013, as well as off-take typical project off-take agreements, equipment procurement and constructions milestones. The last 400MW phase is slated to come on- line in Q1 2018. See Section 2 and Table 6 for discussion of the detailed Project schedule with milestones and phased development. The other sites, Site 1B and C will follow in sequence in 3 to 4 year cycles with the last Solar Component on-line in 2025 subject to market conditions and availability of transmission and interconnect.

Nuclear Component

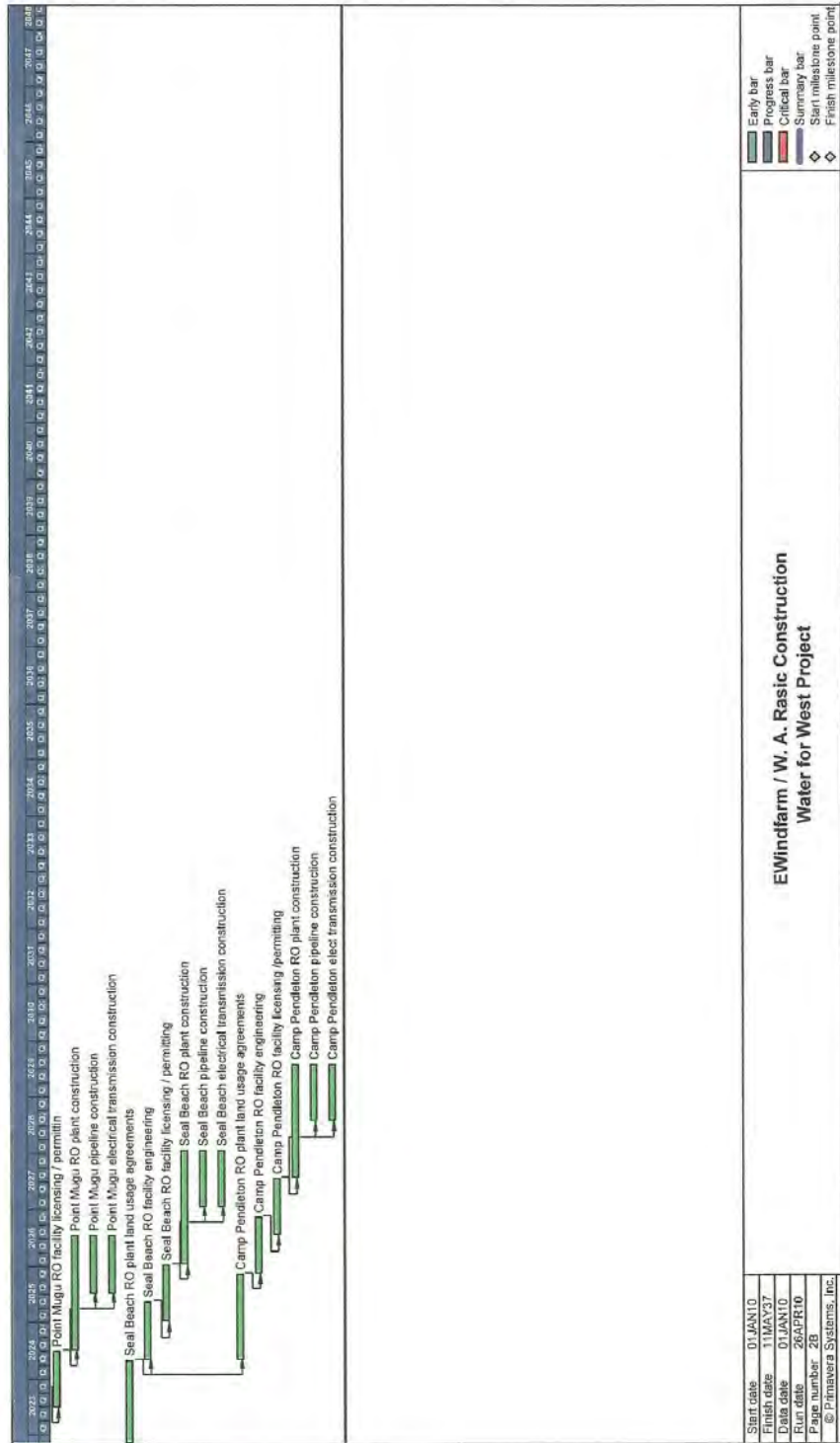
The commercial operation of the first 2.2 GW phase at Site 1A-Crater Flat is planned to commence by the first quarter of 2025 subject to receipt of BLM in 2013 and NRC approval in 2020, as well as off-take typical project off-take agreements, equipment procurement and constructions milestones. The other sites, Site 1B-Striped Hills and Site 1C-Calico Hills, will follow in sequence in 4 year cycles with the last Nuclear Component on-line in 2033 subject to market conditions and availability of transmission and interconnect. The combined schedule for the Solar Component and Nuclear Component is shown in Table 1NN below.

Table 1NN- Combined Development Schedule for Solar Component and Nuclear Component

Water for West Project Schedule for Nuclear and Solar Components



Water for West Project Schedule for Nuclear and Solar Components



Water for West Project Schedule for Nuclear and Solar Components

Act ID	Description	Run Dur	Early Start	Early Finish	Total Float	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
5020	Point Mugu RO facility licensing / permitting	264d 05JUL23	10JUL24	2801d	0														
5030	Point Mugu RO plant construction	528d 11JUL24	25JUL25	2801d	0														
5040	Point Mugu pipeline construction	264d 18JUL25	25JUL26	2801d	0														
5050	Point Mugu electrical transmission construction	264d 18JUL25	25JUL26	2801d	0														
6000	Seal Beach RO plant land usage agreements	366d 02NOV22	10MAY24	2009d	0														
6010	Seal Beach RO facility engineering	264d 13MAY24	19MAY25	2405d	0														
6020	Seal Beach RO facility licensing / permitting	264d 14JAN25	20JAN26	2405d	0														
6030	Seal Beach RO plant construction	528d 21JAN26	31JAN28	2405d	0														
6040	Seal Beach pipeline construction	264d 27JAN27	31JAN28	2405d	0														
6050	Seal Beach electrical transmission construction	264d 27JAN27	31JAN28	2405d	0														
7000	Camp Pendleton RO plant land usage agreements	366d 13MAY24	20NOV25	2009d	0														
7010	Camp Pendleton RO facility engineering	264d 21NOV25	26NOV26	2009d	0														
7020	Camp Pendleton RO facility licensing / permitting	264d 24JUL26	29JUL27	2009d	0														
7030	Camp Pendleton RO plant construction	528d 30JUL27	10AUG29	2009d	0														
7040	Camp Pendleton pipeline construction	264d 04AUG28	10AUG29	2009d	0														
7050	Camp Pendleton elect transmission construction	264d 04AUG28	10AUG29	2009d	0														

Early bar

Project bar

Critical bar

Summary bar

Start milestone point

Finish milestone point

EWindfarm / W. A. Rasic Construction

Water for West Project

Start date: 01JAN10

Finish date: 11MAY37

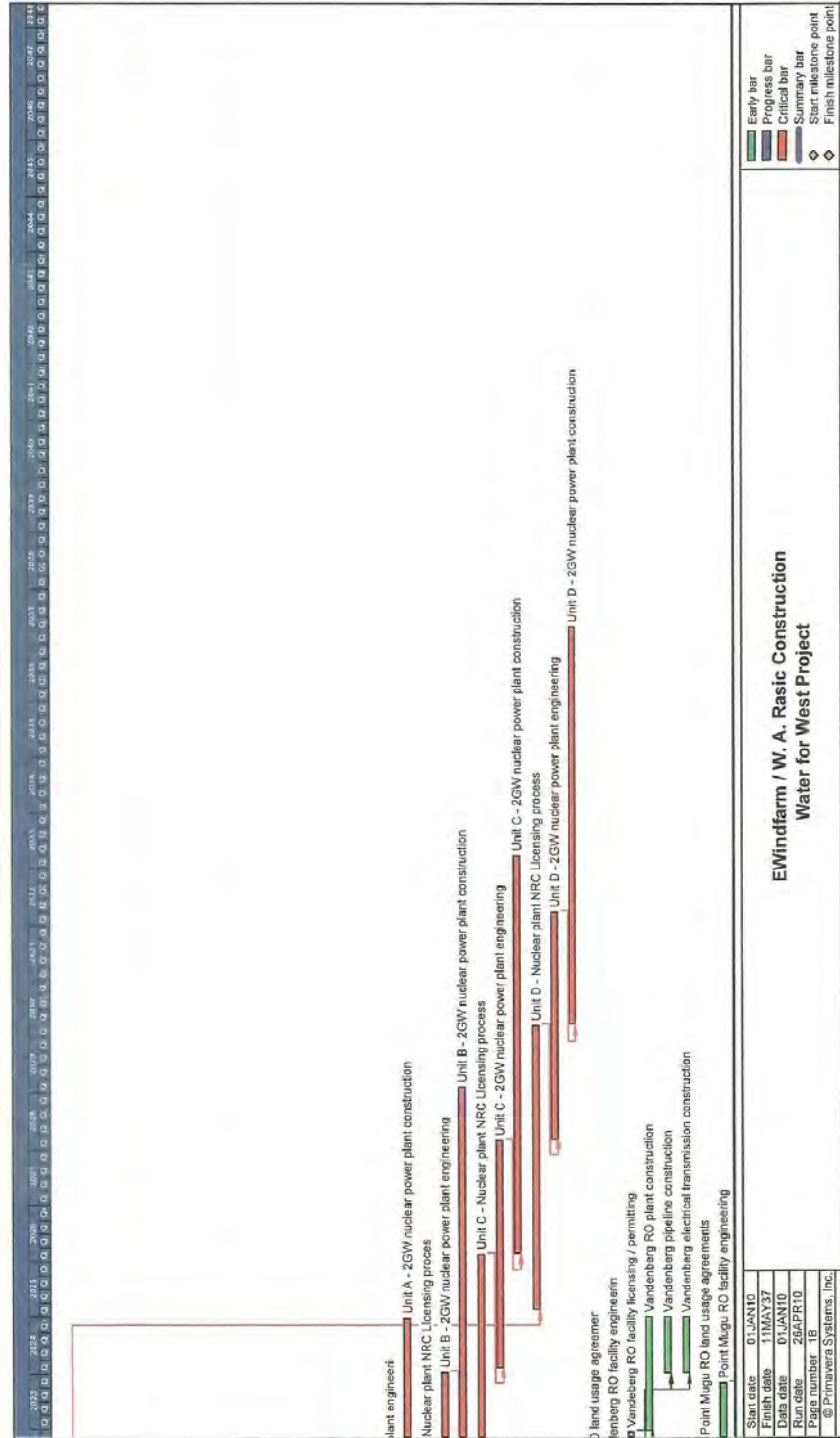
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Page number: 24

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Water for West Project Schedule for Nuclear and Solar Components



b. Purpose and Need for the Project

Proponent requests this right-of-way to install for the purpose of building and operating a commercial Energy Park consisting of a Solar Component and Nuclear Component as follows;

Solar Component

6GW solar generating facility 3x 2GW arrays with each array consisting of five (5) PV solar power Phases each 400 MW capacity (up to 2GW total capacity at each of three sites 1A, B and C) interconnected to the nearby 138/230kV/500kV transmission line. This application for a right-of-way grant for solar energy facility is based on the BLM Solar Energy Policy. The goal of the BLM land management policy is to encourage the development of solar energy resources on America's public lands. The proposed project would benefit the public by providing renewable electric power generation in accordance with the BLM Policy.

Nuclear Component

6.6GW nuclear electric generating facilities from 3 x 2.2GW two unit AP1000™ plants or equivalent (up to 2.2 GW total capacity at each of three sites 1A, B and C) interconnected to the nearby 500kV or higher transmission line. This application for a right-of-way grant for nuclear energy facility is based on the DOE Nuclear Energy Policy and the development of Energy Parks at DOE sites and the May 26, 2010 letter from DOE asking EWind to submit an unsolicited proposal for Yucca Mtn (see Exhibit 1). The goal of the BLM land management policy is to encourage the development of renewable energy resources on America's public lands and to restore public lands which have been contaminated by industrial uses (restore brown-fields). The proposed project would benefit the public by providing renewable electric power generation in accordance with the BLM Policy.

c. General Facility Description, Design and Operation

i) Project location, land ownership and jurisdiction

BLM Lands

The project would be sited entirely on BLM lands located within the northwest portion of the Las Vegas District in Amargosa Valley, along Interstate Highway I95 approximately 10 to 24 miles north of the town of Amargosa Valley. The Project would be located on 46,400 acres of BLM lands within sections including T12S, R48E; T14S, R50E; T15S, R50E; T15S, R50W; T15S, R49E; T14S, R50E; T14S, R51E; and T13S, R50E as described below;

Solar Component

- a) Drawings of typical solar plant installation- see Figures 3-4 and Appendix A.
- b) Maps- see Figure 1 and 1-AA
- c) Engineering design drawings and/or standards for roads, drainage and power line
- see Figures 1- 5, 9, 10, 12 and Appendix A.
- d) Description of facility- see Table 2

Nuclear Component

- a) Drawings of typical nuclear plant installation- see Exhibit 3.
- b) Maps- see Figure 1
- c) Engineering design drawings and/or standards for roads, drainage and power line
- see Exhibit 3.
- d) Description of facility- see Figure 2N and Exhibit 3

Adjacent Private Lands

The Project site is located entirely within the Nellis AFB/ DOE Nuclear Test Site (NTS) and the former DOE Yucca Mtn Nuclear Waste Repository (Yucca Mtn) and there are no adjacent private lands as shown on the BLM Master Title Plat (see Exhibit 5)

NEPA Alternative Site Investigation

As part of the NEPA alternative site investigation, Proponent contacted over 270 private landowners by mail offering to purchase their property at fair market value between Aug and Dec of 2007 in Nye County. However, the landowners who responded by telephone to the above mail campaign own small distributed lots and Proponent found it impossible to assemble a critical mass of contiguous private sites necessary for a commercial Energy Park in Nye County. Based on this work, proponent considers this BLM ROW application for BLM lands to be the only feasible alternative to build this Project.

ii) Legal land description of facility (federal and non-federal lands)

The entire Project is located on 46,400 acres of Federal BLM lands and a description of the facility is given in Table 2 and Exhibit 5.

Table 2- BLM Properties Applied for Right-of-Way Grant

Site 1A- Crater Flat Site

(Ref. Crater Flat, Nevada USGS 7.5 deg quadrangle; see Fig 1A)

T12S, R48E	<u>Acres</u>
Sec 1: All	640
Sec 2: All	640
Sec 3: All	640
Sec 4: All	640
Sec 9: All	640
Sec 10: All	640
Sec 11: All	640
Sec 12: All	640
Sec 13: All	640
Sec 14: All	640
Sec 15: All	640
Sec 16: All	640
Sec 21: All	640
Sec 22: All	640
Sec 23: All	640
Sec 24: All	640
Sec 25: All	640
Sec 28: All	640
Sec 33: All	640
Sec 34: All	640
Sec 35: All	640

Sec 36: All	<u>640</u>
TOTAL	14,080

Site 1B- Striped Hills Site

(Ref. Striped Hills, Nevada USGS 7.5 deg quadrangle; see Fig 1B)

T14S, R50E	<u>Acres</u>
Sec 8: All	640
Sec 9: All	640
Sec 16: W1/2	320
Sec 17: All	640
Sec 18: E1/2	640
Sec 19: All	640
Sec 20: All	640
Sec 21: W1/2	320
Sec 25: S1/2	320
Sec 26: S1/2	320
Sec 27: S1/2	320
Sec 28: All	640
Sec 29: All	640
Sec 22: All	640
Sec 30: All	640
Sec 31: All	640
Sec 32: All	640
Sec 33: All	640
Sec 34: All	640
Sec 36: All	<u>640</u>
SUBTOTAL	9,280

T14S, R50E	<u>Acres</u>
Sec 8: All	640
Sec 9: All	640
Sec 16: W1/2	320
Sec 17: All	640
Sec 18: E1/2	640
Sec 19: All	640
Sec 20: All	640
Sec 21: W1/2	320
Sec 25: S1/2	320
Sec 26: S1/2	320
Sec 27: S1/2	320
Sec 28: All	640
Sec 29: All	640
Sec 22: All	640

Sec 30: All	640
Sec 31: All	640
Sec 32: All	640
Sec 33: All	640
Sec 34: All	640
Sec 36: All	<u>640</u>
SUBTOTAL	9,280

T15S, R50E	<u>Acres</u>
Sec 1: N1/2	640
Sec 2: N1/2	640
Sec 3: N1/2	320
Sec 4: N1/2	640
Sec 5: All	640
Sec 6: All	640
Sec 7: All	640
Sec 8: All	640
Sec 17: All	640
Sec 18; N1/2, N1/2SW1/4, N1/2SE1/4, N1/2SE1/4SW1/4, N1/2SE1/4SE1/4	<u>160</u>
SUBTOTAL	3,080

T15S, R50W	<u>Acres</u>
Sec 25: E1/2	320
Sec 36: All	<u>640</u>
SUBTOTAL	960

T15S, R49E	<u>Acres</u>
Sec 1: All	640
Sec 11: All	640
Sec 12: All	640
Sec 13: NE1/4, N1/2NW1/4	<u>240</u>
SUBTOTAL	2,160

TOTAL SITE 1B STRIPED HILLS	15,480
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Site 1C- Calico Hills Site

(Ref. Jackass Flats and Busted Butte, Nevada USGS 7.5 deg quadrangle; see Fig 1C)

T14S, R50E	<u>Acres</u>
Sec 1: All	640
Sec 3: All	640
Sec 4: All	640
Sec 5: All	640
Sec 6: E1/2	320
Sec 7: NE1/4	640
Sec 8: N1/2	640

Sec 9: N1/2	640
Sec 10: N1/2	<u>640</u>
SUBTOTAL	4,480

T14S, R51E	<u>Acres</u>
Sec 5: All	640
Sec 6: All	640
Sec 7: All	640
Sec 8: All	<u>640</u>
SUBTOTAL	2,560

T13S, R50E	<u>Acres</u>
Sec 8: SW1/4	160
Sec 12: All	640
Sec 14: S1/2	320
Sec 15: S1/2	320
Sec 16: S1/2NW1/4	80
Sec 17: All	640
Sec 18: SE 1/4	160
Sec 19: E1/2	320
Sec 20: All	640
Sec 21: All	640
Sec 22: All	640
Sec 23: All	640
Sec 24: E1/2, S1/2SW1/4, W1/2NW1/4	480
Sec 25: All	640
Sec 26: N1/2	320
Sec 27: N1/2NE1/4, N1/2MW1/4, W1/2NW1/4NW 1/4	240
Sec 28: All	640
Sec 29: All	640
Sec 30: E1/2	320
Sec 31: E1/2	640
Sec 34: SW1/2, W1/2NW 1/4	480
Sec 35: S1/2	320
Sec 36: All	<u>640</u>
SUBTOTAL	9,800

TOTAL SITE 1C	CALICO HILLS	16,840
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Total Area Project Development Sites 1A, B and C	46, 400 acres
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iii) Total acreage and general dimensions of all facilities and components

Solar Component

The total project acreage is 46,400 acres. Ideally, each 2GW solar array requires a footprint of

approximately 9,000 acres or approximately 1,800 acres of flat land for each 500MW phase (less than 2% slope) assuming that all of the land is suitable. However, some of the Project land is not suitable (excessive grade, rock outcroppings, dry washes, etc.) and additional area is required for access roads and transmission lines to each unit and for any setbacks to accommodate visual and other environmental concerns and storm water retention basin to meet BLM's structural integrity condition under the 100 year flood conditions. For this reason, the actual Project area ROW is for 46,400 acres as shown in Figure 1-AA. The general dimensions of the solar array and roads are given in Figures 1-5, and the substation/interconnect/O&M building and related components in Figure 9.

Nuclear Component

The footprint for each tow unit AP1000TM is 770' x 1,610' (28 acres). However, a safety buffer zone is included around each two unit nuclear plant requiring a total protected area of 43 acres to 2,000 acres as dictated by the subsequent NRC licensing process and site specific constraints.

iv) Power plant facilities, thermal conversion process

Solar Component

Unlike the thermal solar collectors, the PV solar collector converts sunlight directly into electricity without the need for a boiler, steam turbine, generator or other auxiliary equipment so the environmental impact is less. The PV panels generate DC power at 50-65 volts. Several panels are installed on a tracking style mounting system and series connected to form strings. The strings are combined in parallel to feed an inverter, which converts the DC power to AC power. The output of multiple inverters are then pooled and stepped up to collection voltage (34.5 kV) by a conventional utility transformer. Multiple transformers are combined onto 16-20 MW collection feeders (see Figure 3). A 34.5kV/138kV substation is located adjacent to the existing 138kV transmission line which crosses the site (see Figure 1A-E and Figure 2). The 34.5 kV feeders are typically underground, unless the rocky soil conditions dictate overhead lines. Based on a preliminary site survey, rocky conditions are avoided with the proposed array layout.

Nuclear Component

The nuclear plants utilize a thermal conversion process which is illustrated in Fig 2N and Exhibit 3 and will be described in more detail in the subsequent NRC license application process.

v) Numbers and general dimensions of solar array, power generation units (wet or dry cooling), towers, substations, transmission lines, access roads, buildings, parking areas.

Solar Component

Solar Array/Power Generation Units

The general plot plans in Figure 2 shows the dimensions of each of the five (5) solar Phases, each with independent PV solar arrays, access roads, and 34.5kV collection lines. All 5 phases will have individual 34.5kV/138kV substations and control/O&M buildings (see Figure 1A-E). To further reduce impact, the subsequent detailed design process will consider combing the balance of plant facilities further in Phases 2-5 such as using a single substation and a single O&M building with smaller satellite control buildings, as necessary.

The solar fields are arranged in clusters (connected via 34.5kV feeders) consisting of multiple 2MW Arrays. Each 2MW Array consists of 16 x 125kW Sub Arrays (see Figure 2, 3) where each 125kW Sub Array is comprised of 42 tracking style mounting systems. Each Sub Array has a 200 ft x 175 ft footprint and a collector surface of 13,000 square feet (see Figure 4 and Appendix A).

Substation/Interconnect/O&M building

Each 34.5 to 138kV/238kV substation/interconnect will require a maximum 388 ft x 291 ft footprint (2.6 acres) as shown in Figure 9C. This substation footprint allows for an O&M building (80ft x 100ft), parking area, communication facilities (PLC/fiber optic links, and, if necessary, a microwave link/satellite tower). The access roads, parking area and storage areas are typically unimproved packed soil construction.

Transmission Lines

Each substation is connected to the VEA 138kV/230kV line by a 138kV/230kV line running along the access roads (see Figure 1). A sketch of the typical pole construction is shown in Figure 5C.

Nuclear Component

Each of the six AP1000TM or equivalent nuclear plants include power generation units (wet or dry cooling), towers, substations, transmission lines, access roads, buildings, parking areas as shown in Exhibit 3 and to be defined in more detail in the subsequent NRC permitting process.

vi) Temporary construction workspace, yards, staging areas

All temporary construction workspace, yards, and staging areas will be within the proposed project footprint or within existing designated construction yards. A typical 23 acre (1,000ft x 1,000 ft) lay-down area and workspace is shown in Figure 5D.

vii) Geotechnical studies and data needs, including solar insolation testing

Solar Component

A preliminary site survey indicates alluvial sandy soil conditions so that grading of access roads and foundations is possible using conventional equipment (D6 – D9 type bulldozers). Geotechnical studies will be conducted on-site by local geotechnical firms as part of the normal project development process. Sufficient number of borings will be obtained to quantify the on-site soil characteristics necessary for the design of the roads, foundations, buildings, hardstand, towers and other related structures. If necessary, a BLM 2920 permit will be applied to conduct soil borings and temporary solar measurements/ anemometry. A portable solar insolation meter will be installed on-site pending BLM site access approval for the EIS field studies and geotechnical investigations.

Existing NREL solar insolation data and review of the actual production data from the nearby Nellis AFB 14MW PV solar plant indicates that the site is suitable for a PV solar project. During the Project's detailed design phase, portable meteorological stations may need to be installed to

confirm the insolation and on-site environmental parameters (temperature, wind speed, wind direction, pressure, and humidity) if deemed necessary.

Nuclear Component

In addition to the above geotechnical studies, more extensive seismic and soil stability studies will be conducted for each the six (6) AP1000TM nuclear plants or equivalent in accordance with NRC licensing requirements. It is noted that the YMP site has been extensively characterized by DO and over 77 tons of reports are available at the Nevada State Energy Office which are expected to assist the BLM and Proponent with meeting general EIS and site specific NRC nuclear plant siting requirements.

viii) Ancillary facilities (administrative and maintenance facilities and storage sites)

Solar Component

All 5 phases will have individual 34.5kV/138kV substations and control/O&M buildings (see Figure 1A-E). To further reduce Project impact, the subsequent detailed design process will consider combing the balance of plant facilities further in Phases 2-5 such as using a single substation in place of four (4) individual substations and a single O&M building/administrative building with smaller satellite O&M buildings, as necessary.

Nuclear Component

The ancillary facilities will be designed to conform with NRC nuclear plant licensing requirements including double security buffer zones and other current post 911 safety and security provisions.

ix) Water usage, amounts, sources (during construction and operations)

Solar Component

This Project is not expected to have any measureable impact on the watershed because of it does not require cooling water/make-up water as conventional thermal solar systems by virtue of its solid state PV design.

Water Usage

The estimated annual water usage for the Project is less than 0.80 acre feet (less than 260,000 gallons) based on a quarterly washing of the PV panels using 4 oz per panel and squeegee. This water would be purchased locally in Pahrump, trucked to the site, and stored in a 10,000-gallon holding tank. The administrative building will use portable water for domestic waste streams such as showers and toilets. A waste water storage tank/ sanitary pump-out system or other system (sanitary septic system) satisfactory to the BLM will be installed. Drinking water will be from bottled water supplied by a local vendor. Water necessary for construction will be trucked in for dust control (wet concrete will be trucked-in from Pahrump).

The estimated water usage during construction is less than the annual operating usage above. The

10,000-gallon holding tank will be erected at the start of construction to supply water for dust control. The water truck will be first in and last out for fire control purposes.

The total Project water usage is summarized in Table 3 and the source of water is described in Exhibit 6.

Table 3- Estimated Water Usage for Project

Construction (Gals/yr)	Operations (Gals/yr)
1 acre feet/day	Less than 260,000

Water Sources

The project is located in the Amargosa Valley hydrographic basin. Although it well outside any designated USACE Sec 404 wet lands or water ways since the Ordinary High Water Mark in this basin is below ground, the Proponent will coordinate with USACE with any required permits. The Proponent has requested access to the unallocated Tritium contaminated water at YMP for this Project and has offered to treat the water under an enhanced lease use and use it for this Project. In exchange for the use of the contaminated unallocated water at YMP, proponent will ask the sponsoring water agencies (who will be the off-takers for the electricity generated by the Project and who will benefit by having power for the desalination plants located on the Pacific Coast) to relinquish a portion of their water allocation from the Colorado River so as to make Nevada and Nye County more water secure and to permit Lake Mead water levels to be restored to their design levels.

Nuclear Component

The water requirement for each nuclear plant ranges from 8,000 to 16,000 gallons per minute depending upon the cooling system alternative utilized at the site as given in Exhibit 3 and to be quantified during the subsequent NRC permitting process.

x) Erosion control and storm-water drainage

Solar Component

The solar arrays are designed to minimize the potential effects of soil erosion, since they are installed on tracking style mounting systems that are 3 to 6 ft above native ground (see Appendix A). The intended tracking system is weight ballasted requiring minimum change of the natural contours. The grading plan will be adjusted to protect the existing natural flows and culverts will be used where roads cross dry washes. For Phase 1, there are 44 culverts (see Figure 2) and a similar number is expected for each of the remaining 4 Phases. The typical road and culvert design is show in Figure 5B.

Erosion control and storm water management measures will be developed and summarized in the SWPPP. Given the nature of the construction works, comprehensive controls will be developed to minimize any potential for erosion. The PV collectors can follow the local contours on 200 ft x 175 ft flat areas, thereby minimizing soil disturbance whereas other solar technologies typically

require a 1 to 2% flat grade of the whole site which may entail extensive grading and erosion control on this site.

Areas to be Cleared and Graded

The existing site has a 5 to 7 percent relatively uniform natural slope from northwest to southeast (sheet flow direction is 140 deg), located on an alluvial runoff drainage basin which can be accommodated by the PV fields (the Pahrump Valley hydro geologic basin, see Ref 7). The erection and operation of the PV fields therefore requires only topsoil stripping and local leveling of significant projections and depressions. The PV panels are relatively small (3 to 6 ft height) and light (300 lbs) structures, contain no hazardous materials, and are not essential structures. Extensive grading of the site will be limited to the substation/interconnect/O&M building areas and access roads. Heavy equipment will be stored on dunnage to protect it from ground moisture.

Within the PV array fields, all vegetation between rows will be cleared with a blade to reduce the risk of fires. Scalping vegetation with a grader blade will likely go a couple of inches into the soil and leave some of the existing root systems intact to anchor the soil at locations where the vegetation was cleared, reducing the potential for erosion. In areas of substantial grading (substation/interconnect/O&M building areas, access roads, and PV field areas requiring significant improvements to grade for access), topsoil will be stripped to a depth of about one foot, in order to remove plants and roots to accommodate PV erection in the solar field, and as pre-excavation activity in the substation/interconnect/O&M building areas (Figure 9C). As much as possible, topsoil will be incorporated in and compacted into the site work shapes. Native vegetation may be harvested for possible reuse to obtain long term soil stabilization.

Finish grade in the PV field areas will maintain natural drainage features where practical and grading is to be designed sheet flow where possible.

All underground piping and wiring will be installed, followed by installation of the foundations for the substation/interconnect/O&M building and associated structures.

Parking areas for construction workers and lay down areas for construction material will be prepared (see Figure 5D). Detailed information regarding the location of the lay down and parking area within the PV field will be developed as part of the subsequent detailed design process.

Primary access to the site is via Nevada Highway 160. A stabilized entrance/exit will be provided to clean vehicle wheels prior to exiting the construction area.

After final site design, and prior to any soil disturbance, Proponent will prepare a drainage, erosion, and sediment control plan and storm water pollution prevention plan

Existing and Proposed Topography

The existing sites have a 1 to 4 percent relatively uniform natural slope generally from northwest to southeast (140 deg sheet flow) which can be accommodated by the PV fields. The site topography varies across each of the PV fields requiring different levels of disturbance to obtain the final topography suitable for the erection and operation of the PV solar collectors. Grade and topography are to be modified (if required) to ensure the minimum disturbance needed for the

access of installation equipment and materials. In areas where the existing terrain will permit access, grading will be restricted and only vegetation is to be removed. In areas where the existing topography requires modifications, access will be improved by leveling (cut and filling) or conventional grading (where required).

At completion of the project, onsite drainage will be accomplished through gravity flow. Storm water will flow through the PV field and diverted around the substation/interconnect/O&M building areas before discharging as sheet flow. The substation/interconnect/O&M building (Figure 9) areas will be graded with moderate slopes to direct runoff and diverted storm water to an infiltration/evaporation area before overflowing through native stone rip-rap to reinstate natural sheet flow conditions. Relatively small rock filters and local diversion berms through the PV fields will discourage water from concentrating to maintain sheet flow.

Volumes of Cut and Fill

The preliminary (30%) grading plan shows the typical road and culvert design (see Figure 5B) and indicates 44 culverts for Phase 1 (see Figure 2) with a similar number expected for each of the remaining 4 Phases. Under this plan, trenches excavated for underground utilities will be entirely refilled and no surplus soil is expected.

The cut and fill volumes for each project elements will be available as part of the 90 per cent design package of the final grading of the site design elevations. This updated information will be incorporated into the final EIS/ROW. The more detailed site conditions and grading and storm water flows as assessed by a certified soil engineer.

Nuclear Component

Although the above storm water controls for PV solar plants are generally applicable to the storm water controls for the smaller footprint of each nuclear plant, the much stricter NRC regulations will be followed. A 30% grading plan for the first two nuclear plants (labeled N-1 and N-2 on Fig 1A Site 1A- Crater Flat) indicates a total of 1.8 million cu yds of cut and 12 million cu yds of fill as shown in Exhibit 3. The remaining other sites (see Fig 1B and 1-C and nuclear plants labeled N-2 through N-6) are expected to involve less site disturbance than Site 1A since they have less grade.

xi) Vegetation treatment and weed management

A stabilized entrance/exit will be provided to clean vehicle wheels prior to entering/exiting the construction area for weed management includes. A vegetation treatment and weed management plan will be developed for the project as part of the normal EIS/ROW process in accordance with BLM weed risk assessment and noxious weed control guidelines. Comprehensive controls will be developed to minimize invasive noxious weeds. The plan will include actions to minimize the spread of weeds during operations and maintenance of the facility.

Vegetation treatment will include segregating and stockpiling surface soils and organic matter during construction and excavation. In areas of substantial grading, native vegetation may be

harvested for possible reuse to obtain long term soil stabilization. All excavated soils are to be reused during construction at the site to prevent subsequent erosion and sedimentation issues. Material suitable for backfill will be stored in stock piles at designated locations.

The typical MSDS Register (see Appendix C) lists ROUND UP – HERBICIDE.

xii) Waste and hazardous materials management

Solar Component

No hazardous materials and wastes are known to exist on this site (to be confirmed by site survey after site access is granted by BLM). No production of any substantial quantities of hazardous materials and wastes are expected from this proposed project since each PV module is made from inert materials (silicon). The tracking style mounting system is designed to minimize the use of petroleum based lubricants. The pad mounted 34.5kV transformers and the 34.5/138kV substation transformers will be filled with non-hazardous oil and will have spill containment. Although it is not expected, should there be any production or handling of hazardous materials during normal operation of the Project, they would be handled in accordance with Nevada's Integrated Waste Management Plan that governs collection and disposal. It is noted that the proposed PV system, in general, does not generate significant waste and/or hazardous materials as opposed to other solar technologies that use chemical based transfer fluids, generate sludge and other wastes by virtue of their boilers and power production equipment including turbines, generators and other rotating machinery. The list of hazardous chemical that could be generated or used on site is given in Table 3 and MSDs sheets are given in Appendix C. The handling and disposal of hazardous wastes and materials during construction will be addressed in the SWPPP, HSP and, if required, NPDES and USACE Section 404 Permits.

Nuclear Component

Nuclear wastes and hazardous materials and wastes will be handled during the construction and operation of the nuclear plants strictly in accordance with NRC rules and regulations as well as the above procedures.

Material Handling and Storage

All construction equipment will be maintained to control leaks and spills, fueling will only be conducted within contained areas. Any contaminated soils resulting from site spills will be dug up as quickly as possible, and then removed from the site for proper disposal.

There will be chemicals stored and used during the construction and operation of the Project. All hazardous materials will be handled and stored in accordance with applicable codes and regulations. An HSP will be generated to inventory and show location map of hazardous material onsite and emergency response plan for hazardous materials incidents. Specific topics to be covered in the plan include;

- Facility identification
- Emergency contacts
- Chemical inventory information (for every hazardous material above threshold limits)

- Site map
- Emergency notification data
- Procedures to control actual or threatened releases
- Emergency response procedures
- Training procedures
- Certification

The quantities of hazardous materials that will be stored on site during construction will generally be limited to gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. There are no feasible alternatives to vehicle fuels and oils for operating construction equipment. The types of paints required are dictated by the types of equipment and structures that must be coated and by the manufacturer's requirements for coatings.

The following best management plans will be considered for material handling and storage;

- Vehicle and equipment cleaning
- Vehicle and equipment refueling
- Vehicle and equipment maintenance
- Material delivery and storage
- Material use
- Spill prevention and control

Solid and Hazardous Waste Management

During construction and operation, the primary waste generated will be solid nonhazardous waste which will be disposed offsite as follows;

- Paper, wood, glass, and plastics
- Concrete
- Metal

Wastewater

During construction and operation, the waste water will be generated and disposed of in accordance with applicable regulations;

- Wastewater generated during construction; storm water runoff and equipment wash down water, etc.
- Sanitary waste (vacuum truck pump-out)

Groundwater/Dewatering Controls

It is unlikely that groundwater will require removal during the construction or operation phase of the Project because the groundwater table in Amargosa Valley is substantially below the maximum excavation depth of 15 ft or so.

The infiltration/excavation basins at the substation/interconnect/O&M building would be constructed prior to start of onsite trenching or excavation activities. Subsequently, storm water would be conveyed as needed (pumped or gravity flow) from open pit areas to these infiltration/excavation basins, which will be sized to handle the 50-year storm events, and allowed to infiltrate or evaporate.

If any contamination is detected via odors or visible sheens, the collected storm water will be handled and properly dispose of in a manner consistent with federal, state, and local regulations.

Table 4- List of Hazardous Materials Used and Wastes Generated During Construction/Operation

Materials

Gasoline
Diesel fuel
Motor oil
Transformer oil
Paints
Solvents
Cleaning supplies
Welding supplies

Wastes

Used motor oil
Used transformer oil
Used paints/solvents
Used cleaning supplies
Used welding supplies

See Appendix C for typical MSDS register/hazardous substances register.

xiii) Fire protection

A fire protection plan will be prepared for the Project in consultation with the BLM and local fire department. The plan will be incorporated into the Project Health and Safety Plan and Environmental Management Plan to address the following issues;

- Potential for the construction activities to initiate a brushfire
- Potential for operational facilities to initiate a brushfire
- The impact of the facility on fighting fires, whether originating from the site or elsewhere
- Sprinklers in facility buildings, if required by the Fire Marshall.

x) Site security and fencing

Based on consultation with the BLM to determine the best type of fence for both the facility and the environmental issues, the site will be fenced-in and access limited to authorized persons during construction and operations such as a chain link 6ft high fence with tortoise barrier at the bottom to minimize wildlife entry.

xi) Electrical components, new equipment and existing system upgrades

Proponent intends to file for an interconnect study with the following organizations; 1) Valley Electric Association (VEA) to their 138/230kV line (see Attachment 1) and; 2) ReTco for interconnect to the Solar Express 500kV 1500MVA line recently filed with BLM for an EIS. The VEA report will describe the required electrical components, equipment and existing system upgrades. Unlike other conventional thermal solar collectors with steam turbines and synchronous generators, which must be synchronized with the utility, the PV solar collector arrays utilizes a DC/AC inverter that can be directly coupled to the grid. The SF299 applications to the BLM for Soalr Express Line and substation at Amargosa Valley has been submitted by ReTco to BLM at this time (see Exhibit 4).

xii) Interconnection to electrical grid

Solar Component

See Figures 9 and 10 showing the utility interconnect point..

Nuclear Component

See Figures 1 showing the utility interconnect point.

xiv) Spill prevention and containment for construction and operation of facility

Solar Component

An SPCP will be prepared for the 138kV substation and 34.5kV collection oil-filled transformers in consultation with the BLM and local health department. The plan will be incorporated into the Project Health and Safety Plan and Environmental Management Plan to address the following issues;

- Potential for the construction activities to contaminate soil
- Potential for operational facilities to contaminate soil
- Secondary containment vessels for oil filled transformers.

Significantly, the PV solar collectors are solid state units with no need for spill prevention and containment because there are no chemical cooling liquids, and/or fuel storage tanks as found with conventional solar thermal technologies.

Nuclear Component

An SCP will be prepared for the nuclear component including the safe handling, storage and disposal of hazardous and radioactive materials.

xv) Health and safety program

A Health and Safety Program will be prepared for the Project in consultation with the BLM and local OSHA/FEMA office which will include hazardous material handling and storage as discussed previously in Sec xii.

d. Other Federal, State and Local Agency Permit Requirements

i) Identify required permits

Solar Component

Although the core Project permit here is the NEPA Environmental Impact Statement (EIS) / Record of Decision (ROD) and Right-of-Way (ROW) issued by the BLM, there may be several agencies which may or may not have jurisdiction over the project area. This may be reduced based on the results of the detailed field surveys. A list of potentially required permits and authorizations is provided in Table 5.

Table 5- Federal, State and Local Agency Permits

Lead Agency	Regulatory Compliance / Permit / Document
BLM	<ul style="list-style-type: none">• NEPA / ROW / EIS• Endangered Species Act/ Section 7 Consultation / Biological Assessment• NRHP Act Section 106 / Cultural Resource documents• 2920 permit for borings/anemometers• SF 299 for VEA project (N-62861)
Army Corps of Engineers	<ul style="list-style-type: none">• Clean Water Act Section 404 Permit / Jurisdictional Waters of the US Delineation/categorical exclusion
State of Nevada	<ul style="list-style-type: none">• NPDES Permit / Storm Water Pollution Prevention Plan (disturbed area exceeds 5 acres)• Air Quality / Dust Permit• Temporary Working in Waterways Permit /categorical exclusion• NDOT Encroachment Permit/categorical exclusion• Fish and Wildlife - Consultation• Public Utilities Commission- Consultation/UEPA• Others
Nye County	<ul style="list-style-type: none">• Land Use Application• Building Department Application• Health Department Application

The above list is based on the fact that the PV system has a reduced environmental footprint which is expected to be demonstrated in the EIS process. However, for completeness, the more lengthy environmental matrix for a conventional CSP solar plant is given in Exhibit 7.

Nuclear Component

The nuclear component will require an NRC license application in addition to the above permits and a more extensive list of stakeholders as follows below

Table 5N- Summary of Permits for Nuclear Component

Potential Authorizations, Permits, Reviews, and Approvals			
Action Requiring Permit, Approval, or Review	Permit/Approval or Review	Accepting Authority/ Approving Agency	Statutory Reference
Federal			
Temporary Land Use Permit; Form 2920	Temporary Use Permit (pre-operational activities on BLM land)	BLM	43 USC 1201; 43 CFR Part 2920
Rights-of-way Over Land Under Federal Management; Form SF-299	Right-of-way Grant	BLM	FLPMA 1976 (PL 94-579) USC. 1761-1771 and 43 CFR 2800
NEPA Compliance to Process Right-of-way Application	EIS and ROD	BLM	NEPA, 40 CFR Part 1500 et. seq.
National Historic Preservation Act Compliance to Process Rights-of-way Application	Section 106 Compliance or Consultation	BLM/Nevada State Historic Preservation Office	National Historic Preservation Act of 1966, 36 CFR part 800; 16 USC 47; NRS Chapter 384
Compliance with the Endangered Species Act	Review by BLM to initiate Section 7 consultation	BLM/USFWS	Endangered Species Act Section 7 Consultation, 50 CFR Part 17, 16 USC 1536
Dredge or Fill Activities in Waters of the United States; Dry Wash Crossings	Jurisdictional Delineation Report Concurrence, Nationwide or Individual Permit	USACE	33 USC 1344
Project Component Height Relative to Air Traffic	No Hazard Declaration required if any structure is more than 200 feet	Federal Aviation Administration	49 USC 1501, 14 CFR Part 77
U.S. Environmental Protection Agency (EPA) ID Number	Compliance with federal hazardous waste management requirements	EPA	40 CFR Part 124, 260, and 270
Oil Pollution Prevention – Spill Prevention, Control, and Countermeasure (SPCC) Plan	If total aboveground storage capacity of oil is greater than 1,320 gallons, then a SPCC Plan is required.	EPA – Office of Emergency Services	40 CFR Part 112, and Section 311(j) of the Clean Water Act
Review of Project for its potential impact on military over flights and operations	Department of Defense R 2508 Complex Sustainability Office	US Department of Defense	Department of Defense
State of Nevada			
Permit to Construct a Public Utility in Nevada	Utility Environment Protection Act – Permit to	Nevada Public Utility Commission	NRS 704.820 – 704.900, NAC 703.415 – 703.427

Potential Authorizations, Permits, Reviews, and Approvals			
Action Requiring Permit, Approval, or Review	Permit/Approval or Review	Accepting Authority/ Approving Agency	Statutory Reference
	Construct		
Discharge of Stormwater to Waters of the State	Construction Stormwater General Permit (NVR 100000)	Nevada Division of Environmental Protection (NDEP) – Bureau of Water Pollution Control	40 CFR § 122.26(b)(14), NRS 445A.465
Section 401 Certification	Required if Section 404 permit is needed- State certification that federal permit does not violate water quality standards	NDEP – Bureau of Water Quality Planning	Section 401 of CWA
Separate Stormwater Permit for operations	General Stormwater Permit for Industrial Activities	NDEP - Bureau of Water Pollution Control	NRS 445A.465
Temporary permit needed for groundwater discharge associated with construction	Groundwater Discharge Permit	NDEP - Bureau of Water Pollution Control	NRS 445A.465
Operating Permit Class I, II, or III (Depending on Calculated Potential to Emit)	Air Quality Operating Permit	NDEP – Bureau of Air Pollution Control	NRS 445B.100 through 445B.640, NAC 445B.001 through 445B.3689 (operating permits outside Clark County)
Construction Activities Disturbing More than 5 Acres	Stand-alone Surface Disturbance Permit	NDEP – Bureau of Air Pollution Control	NAC 445B
Permit to Store, Use of Manufacture Hazardous Materials at a Facility	Hazardous Materials Permit	State Fire Marshal	NAC 477.323, NAC 477.325
Permit to Appropriate Water; Change of Use	Permit to Appropriate the Public Water of the State of Nevada	Nevada Division of Water Resources	NRS 533 and 534
Public Water System Permit	Non-community Water System	NDEP – Bureau of Safe Drinking Water	NRS 445, NAC 445A.450 through 445A.6731
Use of a Highly Hazardous Substance	Chemical Accident Prevention Program/Authority to Construct and Permit to Operate	NDEP	NRS 459.380
Management of Hazardous Waste	Hazardous Waste Management Permit	NDEP – Bureau of Waste Management	NRS 459.400 through 459.600
Transporting of Hazardous	Hazardous Materials	Nevada Department of	NRS 459.400 through

Potential Authorizations, Permits, Reviews, and Approvals			
Action Requiring Permit, Approval, or Review	Permit/Approval or Review	Accepting Authority/ Approving Agency	Statutory Reference
Materials	Transportation Permit	Transportation	459.600
Solid Waste Class II Wavered Landfill Authorization	Approval to Operate a Solid Waste System	NDEP – Bureau of Waste Management	NRS 444.440 through 444.645
General Permit to Operate Septic System	On-site Sewage Disposal System	NDEP Bureau of Water Pollution Control	NRS 445A, NAC 445A
Construction of Evaporation Ponds	Industrial Artificial Pond Permit	Nevada Department of Wildlife	NRS 502.390, NAC 502.460 through 502.495
Disturbance of any Native Plant Species and/or Native Plant Habitat Regarded as Threatened with Extinction	Conditional Permit for Disturbance or Destruction of Critically Endangered Plants	Nevada Division of Forestry	NAC 527.260 through 527.300
Disturbance of Wildlife and/or Wildlife Habitat (Not specific to endangered species)	Written Approval Prior to Handling Any Wildlife as Defined by the State of Nevada	Nevada Division of Wildlife	NRS 445, 501.181, and NRS 503.597; NAC 504.520
Encroachment or Construction Activities within Highway Right-of-way	Right of Way Occupancy Permit	Nevada Department of Transportation	NAC 408
Pressure vessel specification and certifications	Boiler & Pressure Vessel Certificate	NV Industrial Relations Division	NRS 455C.100
Required for extraordinarily large or oversized equipment traveling on state roads or unusual impacts to traffic are anticipated	Nevada Department of Transportation Super Load Permit	Nevada Department of Transportation	NRS 484.471
Nye County			
Building and operation fire safety	Fire Safety Compliance Certification	Nye County Bureau of Fire Prevention	Nye County Code
Certification of flood zone location	Flood Damage Prevention Permit	Nye County Planning Department	Nye County Code
Type, location, duration of encroachment onto public roadway	Encroachment Permit	Nye County Department of Public Works	Nye County Code
Building Permit (for structures)	Building Permit	County Building Division	Nye County Code

ii) Status of permits

The ROW application has been initiated with the BLM and the other applications will be filed after consultation with the BLM.

e. Financial and Technical Capability of Applicant

Solar Component

The Proponent, EWindfarm, Inc, and its participants, Matinee Energy and others to be named, have the necessary technical and commercial resources to plan, permit, construct, commission the Project as described in Exhibit 6.

Matinee Energy's financing partner, JP Morgan is rated A+/A1 by S&P and Moody's, respectively. Please see JP Morgan's most recent 10-Q filing at www.jpmorgan.com for further financial and credit-related information.

Please see EWindfarm website www.ewindfarm.com for more information.

Nuclear Component

The proponents for the Nuclear Component, EWindfarm, Inc and the Westinghouse/Shaw Consortium and others (to be named) have the necessary technical and commercial resources to plan, permit, construct, commission the Project as described in Exhibit 3 and 6.

Please see Westinghouse/Shaw websites www.westinghousenuclear.com and www.shawgrp.com for more information.

2.0 CONSTRUCTION OF FACILITIES

a. Solar field design, layout, installation and construction processes including timetable and sequence of construction.

Solar Component

Design and Layout of Phases 1-5

At each of the three sites, the Solar Component would be constructed in five 400MW phases (Phases 1-5) to provide a combined total of 2GW of electricity. Each phase is shown with a separate substation and O&M buildings (see Figure 1SA-E). If feasible, adjacent phases may combine facilities to share a central control building/ O&M building for all five phases and use smaller satellite buildings as appropriate. Proponent will engage a contractor(s) to design, engineer, procure and construct the Project. The contract specification will address the project's environmental compliance that will be submitted to the BLM in support of the BLM Record of Decision. If necessary, the Project design will be amended to address consent conditions and requirements of VEA and ReTco that would be issued in respect of the construction and operation phases of the development. This will ensure that the project construction and operation is consistent with the consent and associated approvals. Proponent will work with the contractor to finalize design elements, complete planning and, subject to obtaining the necessary approvals, to progress the construction and operation of the Project.

Construction Process

The Project intends to utilize major solar equipment suppliers and contractors that are familiar with the local construction and environmental issues, in addition to well developed environmental management systems. In selecting the project contractor, proponent will review the contractor's prior environmental, code compliance, and job safety record, to ensure that the contractor's management system will ensure that the project's environmental, health and safety goals are achieved.

The construction phase for each Phase will extend over 12 to 24 months and will involve:

- transport of equipment and materials to site
- daily movement of a work force to the site
- civil works for roads, substation, buildings, water tanks, PV arrays, lay down areas, underground (and/or overhead as required) power cables and unit substations.
- erection of substation, buildings, tanks, and PV arrays
- electrical connections within the Project and for grid connection
- commissioning of the Project
- restoration of any disturbed areas of land

The transport of materials and equipment to site during the construction phase will involve a temporary increase in the local traffic volume of trucks. Vehicles accessing the site will potentially include a range of „over-size“ and „over-mass“ vehicles. Preliminary indications are

that a single access route to each of the Phases will be suitable. The environmental assessment will include a review of the suitability of roads that can potentially be used to access the site and potential impacts on road safety and local traffic movements identified. Where necessary, mitigation measures will be proposed for the project and suitable measures will be incorporated within a traffic management plan.

Sequence of Construction

Initial site works will include establishment of a temporary construction site office for construction, transport of equipment and cranes to the PV solar collector sites, grading and excavation of footings for PV collectors and trenching for underground cables and setting overhead line poles. A survey will be conducted to identify any endangered or threatened species are potentially present on parts of the site and the project will be designed to avoid any significant impact on these. Micro-siting of the PV collectors can be used to minimize impact avoid critical habitat. A biological assessment will be undertaken to identify any site sensitivities and mitigation measures to manage the project's impacts.

Potential for soil erosion and dust generation during on shore earthworks will be assessed and measures identified to mitigate such impacts. Earthworks also have potential to disturb any surface or shallow sub-surface heritage items. Accordingly, an assessment of historical and archeological heritage values of the site will be undertaken by a specialist in conjunction with relevant stakeholders. Where potential impacts are identified, management measures will be developed to address the potential impacts.

Noise impacts can be associated with the construction phase arising from transport of materials and equipment to site, site earthworks, excavation of turbine footings and erection of the turbines and installation of the substation. Controls will be incorporated in the construction environmental management plan and will include adoption of specific working hours and use of compliant equipment.

Site restoration following construction works will focus on re-vegetation of disturbed ground, reduction of weed development and control of any erosion and sedimentation.

Construction will be undertaken in accordance with an environmental management plan and monitoring of performance will be routinely undertaken.

Construction contractors will, in consultation with BLM and the local Fire Service, implement fire prevention procedures during the construction phase. The Project intends to install a 10,000-gallon water storage tank which may be an additional source for water for the local Fire Service. Fire extinguishers will be located in each truck and temporary construction building.

Timetable for Construction

The construction cycle will require 12 to 24 months for the first 400 MW phase to begin commercial operation, and 36 to 54 months for all five phases (2GW total). Construction will start after all approvals have been received and financial closing has taken place. Assuming the 30 year right-of-way application record-of-decision (ROD) is the critical path item for final

approvals and financing, and that the ROD is received from the BLM Q1 2013, the construction cycle could look as follows:

- Begin construction (Phase 1-Site 1A Crater Flat 400MW) - Jul 2013
- Phase 1 start up and test - Feb 2015
- Phase 1 commercial operation - Mar 2015
- Other Phases to follow in 9 - 12 month increments
- Last Phase commercial operation (total 2GW) – Feb 2018

Other sites to follow in sequence (no demobilization)

- Site 1B- Striped Hills start construction Feb 2018; commercial operation Feb 2023
- Site 1c- Calico Hills start construction Feb 2023; commercial operation Feb 2028

Table 6S – Preliminary Project Timeframe

Phase	Duration	Approx. Timing
POD, NOI, SOW Approved by BLM EIS Contractor selected	4 months	Dec 2010
EIS application Submitted	9 months	Dec 2011
BLM, Federal, and State Review and Approvals (draft)	3 months	May 2012
BLM, Federal, and State Review and Approvals (revised)	1 month	Dec 2012
BLM, Federal, and State Review and Approvals (final)	1 month	Jan 2013
Project Financing completed	1 month	Feb 2013
Phase 1 construction and grid connection	11 months	Feb 2013
Phase 2 construction and grid connection	11 months	Nov 2015
Phase 3 construction and grid connection	11 months	Aug 2016
Phase 4 construction and grid connection	11 months	May 2017
Phase 5 construction and grid connection	11 months	Feb 2018
Operation	30 years	To 2048

Phase	Duration	Approx. Timing
Decommissioning or re-powering	1 year	After 2048

Nuclear Component

The same general construction process will be utilized for the nuclear component as above but the construction sequence is longer due to the added complexity of the equipment as follows;

- Begin construction (1-Site 1A Crater Flat Unit N-1 1.5GW) - Nov 2017
- Phase 1 start up and test - Feb 2025
- Phase 1 commercial operation - Mar 2025
- Begin construction Unit N-2 - Jan 2022
- N-2 commercial operation (Total 3GW) – Feb 2029

Other sites to follow in sequence (no demobilization)

- Site 1B- Striped Hills start construction Feb 2026; commercial operation Apr 2033
- Site 1c- Calico Hills start construction Mar 2030; commercial operation May 2037

Table 6N – Preliminary Project Timeframe

Phase	Duration	Approx. Timing
POD, NOI, SOW Approved by BLM EIS Contractor selected	6 months	Dec 2010
EIS application Submitted	12 months	Dec 2011
BLM, Federal, and State Review and Approvals (draft)	5 months	May 2012
BLM, Federal, and State Review and Approvals (revised)	7 month	Oct 2012
BLM, Federal, and State Review and Approvals (final)	1 month	Jan 2013
NRC License application filed N-1 Plant		Oct 2012
NRC License approved N-1 Plant	44 months	Nov 2017
Power Plant Engineering N-1 Plant	52 months	Dec 2019
Construction N-1 Plant	62 months	Jan 2025
Commercial Service N-1 Plant	6 month	Jun 2025

Phase	Duration	Approx. Timing
Operation (40yr term of NRC license)	40 years	To 2065
Decommissioning or re-powering	1 year	After 2065

b. Phased projects, describe approach to construction and operations

Solar Component

400MW Site 1A- Crater Flat Phase 1 is scheduled to start construction Jul 2013 and the subsequent Phases to follow in 6 to 12 month increments as follows; Phase 2- start construction May, 2014; Phase 3 - start construction Feb 2015; Phase 4- start construction Nov, 2015; Phase 5- start construction Aug, 2016. Subsequent sites to follow the same sequence

Nuclear Component

N-1 Plant at Site 1A- Crater Flat is scheduled to start construction Nov 2020 and the next plant, N-2, to follow in 12 month increments as follows; N-2 start construction Nov 2021; N-3 - start construction Feb 2024; N-4 start construction Feb, 2025; N-5- start construction Aug, 2028; N-6 start of construction Aug 2029.

c. Access and transportation system, component delivery, worker access

The transport of materials and equipment to site during the construction phase will involve a temporary increase in the local traffic volume on trucks on Interstate Highway I95. Vehicles accessing the site will include a range of „over-size“ and „over-mass“ vehicles for the substation transformer and overhead utility line poles. Preliminary indications are that a single access route to each of the Phases will be suitable. The environmental assessment will include a review of the suitability of roads that can potentially be used to access the site and potential impacts on road safety and local traffic movements identified. Where necessary, mitigation measures will be proposed for the project and suitable measures will be incorporated within a traffic management plan. The access maps and transportation plans will be provided as part of the EIS and NRC license application process.

d. Construction work force numbers, vehicles, equipment, timeframes

Solar Component

Site establishment for Phase 1 will involve about 60 staff working on the site at any one time. Much of the work will take place at various locations on site and the contractor will also require a temporary site office and storage facilities. A quarrying/crushing facility will be established to provide road bed and foundation materials (see Figure 11) and concrete will be trucked in from local suppliers. Typical equipment list for construction of Phase 1 is given in Table S7.

Table S7 - Equipment Requirements

Equipment	Fuel Type	Number	Equipment	Fuel Type	Number
Excavator	Diesel	3	Concrete truck	Diesel	6
D-9 Bulldozer	Diesel	1	Dump truck	Diesel	2
D-8 Bulldozer	Diesel	1	Fork/Man lift	Diesel	1
D-6 Bulldozer	Diesel	2	Concrete pump truck	Diesel	1
980 Front-end loader	Diesel	1	Generator	Diesel	1
300-Ton crane	Diesel	1	Pick-up truck	Diesel	12
120-Toncrane	Diesel	1	Welder	Diesel	4
90-Ton Crane	Diesel	2	Line truck	Diesel	2
14-H load grader/Gradall	Diesel	1	Scraper	Diesel	2
Water Truck	Diesel	3	Trencher	Diesel	2
Compactor	Diesel	2	Tractor/backhoe	Diesel	1

The time frames for a typical 12 month construction cycle are as follows: 2 months site grading/grubbing; 4 months foundations /access roads/ trenching, 3 months install solar collectors and substation equipment, 3 months commissioning and final grading.

Nuclear Component

The nuclear component will involve similar equipment with the addition of heavy cranes (750 ton) and other specialized equipment and a larger construction crew (4,000 workers / unit) and longer duration (5 years) and the expanded equipment list is shown below in Table N-7.

Table N7- Equipment for Material Transport and Lift
(rel. steam us generation and use, Babcock & Wilcox, 40th ed, 1992)

Material Handling System	Description	Capacity t (t _m)
Site Transport:		
Flatbed trailers	Bed dimension 8 × 40 ft (2.4 × 12.2 m) — deck height 60 in. (1524 mm) used to transport materials from storage to staging area.	20 (18)
Extendable trailers	Bed dimension up to 8 × 60 ft (2.4 × 18.3 m) — deck height 60 in. (1524 mm) used to transport materials from storage to staging area.	15 (14)
Lowboy and dropdeck	Bed dimension up to 8 × 40 ft (2.4 × 12.2 m) — deck height of 24 in. (610 mm) used to transport materials from storage to staging area.	60 (54)
Crawler transporter	Specially designed mechanism for handling heavy loads; see Fig. 9, Lampson crawler transporter for an example of the Lampson design.	700 (635)
Straddle carrier	Mobile design to transport structural steel, piping and other assorted items; see Fig. 10, straddle carrier for an example of this design.	30 (27)
Rail	Track utilized to transport materials to installed location. Continuous track allows material installation directly from delivery car.	as designed
Roller and track	Steel machinery rollers located relative to component center of gravity handle the load. Rollers traverse the web of a channel welded to top flange of structural member below.	2000 (1814)
Plate and slide	Sliding steel plates. Coefficient of friction — 0.4 steel on steel, 0.09 greased steel on steel, 0.04 Teflon on steel. See Fig. 11, sliding plate transport for movement of 1200 t (1089 t _m) vessel.	as designed
Air bearings or air pallets	Utilizes film of air between flexible diaphragm and flat horizontal surface. Air flow 3 to 200 ft ³ /min (0.001 to 0.09 m ³ /s). 1 lb (4.5 N) lateral force per 1000 lb (454 kg) vertical load.	75 (68)
High line	Taut cable guideway anchored between two points and fitted with inverted sheave and hook.	5 (4.5)
Lifting:		
Chain hoist	Chain operated geared hoist for manual load handling capability. Standard lift heights 8 to 12 ft (2.4 to 3.7 m).	25 (23)
Hydraulic rough terrain cranes	Telescopic boom mounted on rubber tired self-propelled carrier.	90 (82)
Hydraulic truck cranes	Telescopic boom mounted on rubber tired independent carrier.	450 (408)
Lattice boom truck cranes	Lattice boom mounted on rubber tired independent carrier.	800 (726)
Lattice boom crawler cranes	Lattice boom mounted on self-propelled crawlers.	2200 (1996)
Fixed position crawler cranes	Lattice boom mounted on self-propelled crawlers and equipped with specifically designed attachments and counterweights.	750 (680)
Tower gantry cranes	Tower mounted lattice boom gantry for operation above work site.	230 (209)
Guy derrick	Boom mounted to a mast supported by wire rope guys. Attached to existing building steel with load lines operated from independent hoist. Swing angle 360 deg (6.28 rad).	600 (544)
Chicago boom	Boom mounted to existing structure which acts as mast, and to which is attached boom topping lift and pivoting boom support bracket. Load lines operated from independent hoist. Swing angle from 180 to 270 deg (3.14 to 4.71 rad).	function of support structure
Stiff leg derrick	Boom attached to mast supported by two rigid diagonal legs and horizontal sills. Horizontal angle between each leg and sill combination ranges from 60 to 90 deg (1.05 to 1.57 rad); swing angle from 270 to 300 deg (4.71 to 5.24 rad).	700 (635)
Monorail	High capacity load blocks suspended from trolleys which traverse monorail beams suspended from boiler support steel. Provides capability to lift and move loads within boiler cavity.	400 (363)
Jacking systems	Custom designed hydraulic or mechanical system for high capacity special lifts.	as specified

e. Site preparation, surveying and staking

Proponent will survey and stake site as soon as the BLM ROW permit is in place.

f. Site preparation, vegetation removal and treatment

Solar Component

Site will be graded and leveled in 200 ft x 175 ft footprint for each string of panels to accommodate the solar collectors (arrays are typically graded to 2% and benched to minimize soil disturbance).

Nuclear Component

The site for each nuclear plant N-1 through N-6 will be will be graded and leveled in (770" x 1,610" footprint and graded to 2% and benched, if necessary, to minimize soil disturbance and a buffer zone around each plant approximately 45 acres to 2,000 acres in total area will be fenced-in as dictated by NRC safety and security requirements.

g. Site clearing, grading and excavation

Any surplus material will be distributed over the surrounding area to blend in with the natural landform and will be reseeded as required by the BLM. All trenches will be installed and backfilled with due consideration to the site erosion and sediment control plan including measures to slow storm-water flows and prevent scouring. Underground 34.5kV cables will be buried at least 3ft below grade.

h. Solar array assembly and construction

Solar Component

The solar panel assembly will involve three mobile cranes together with the transport of components to the site in advance of erection. The components will be temporarily stored on assembly hardstands at the array sites. The solar collectors will be bolted to a stub section embedded within the footings that will be constructed in advance of the collector erection. An access road will be provided along each row of collectors for construction and service.

Nuclear Component

The nuclear plant construction will involve multiple mobile cranes together with the transport of components and modules to the site in advance of erection. The components and modules will be temporarily stored on assembly hardstands. The nuclear containment vessel will be a steel structure lifted into place over the basemat that will be constructed in advance of the erection. A paved access road will be provided along with parking areas and storage areas for construction and service.

i. Power-plant construction

Solar Component

The PV power-plant construction includes construction of the PV solar arrays (described above) and the 34.5kV collection system and the 34.5kV to 138 kV/230kV substation. The construction of the Phase 1 substation will involve the clearing and leveling of an area of 600ft x300 ft,

construction of footings and earth girds, concrete oil containment berms for the two or more large transformers, and installation of the necessary structures and component parts. Lightning protection masts and fiber optic communication cables, and microwave communications (if necessary) will also be provided. Subsequent Phases may require a 230kV substation similar in design to the above 138kV substation with taller poles. The construction of the 34.5kV collection system for Phase 1 will include trenching the cable routes, laying of the cable and backfilling the trench with suitable cover materials and marking the cable routes. Each of 34.5kV 16MW to 20MW feeders will be terminated at the switchboards located in the 138 kV substation and the individual array clusters (see Figures 2-4, and 9). The environmental footprint is substantially reduced for the PV solar system since it can be directly coupled to the utility substation and does not require conventional steam boilers and steam turbine generators as with other conventional solar thermal systems.

Nuclear Component

The nuclear component will be constructed in the same general power plant sequence as above and will include construction of the power plant and balance of plant equipment (see Exhibit 3) in accordance with established NRC standards, rules and procedures.

j. Gravel, aggregate, concrete needs and sources

Solar Component

A batch plant located on-site will be used to process the on-site materials into road bed, foundation, and bedding material (see Figure 12). Excavation of rock will be undertaken by earthmoving equipment or rock breakers. Should any controlled low level blasting be required, it will be undertaken in accordance with all relevant statutory requirements. Micro-siting of the solar PV arrays will be conducted to avoid rock outcroppings. Significantly, the environmental footprint is substantially reduced for the PV solar system since each 200 ft x 175 ft Array can be fitted within the constructable areas on-site.

Nuclear Component

The same general process will be used for the building materials for the nuclear component as described above

k. Electrical construction activities

Solar Component

The electrical construction activities are described above including the 34.5kV to 138 kV/230kV substation and 34.5 kV collection system construction activities. The remaining electrical construction will include installation of the hard-tee or bus bar connection to the existing 128/230kV line and related metering and protection all to be located within the substation footprint. The environmental footprint is substantially reduced for the PV solar system since the PV system can be directly coupled to the utility substation and does not require conventional steam boilers and steam turbine generators as with solar thermal systems.

Nuclear Component

The same construction activities will be followed for the nuclear component as described above but the substation will be higher voltage (500kV or 750kV) and will be designed and constructed in accordance with NRC requirements.

I. Aviation lighting (power towers, transmission)

Solar Component

No obstruction lights are required for this Project since there are no towers or structures above 200ft in height. The tallest structures will be the dead-end structure (138kV transmission line pole) which will be less than 200ft in height. However, as part of the normal EIS review process, consultation will be made with the local FAA/DoD office regarding obstruction lighting and a no-objection letter will be obtained. Since the PV panels are close to the ground (4 to 6 feet) and since there are no tall structures (other than utility the substation). The environmental footprint of the PV system is significantly reduced in comparison with solar thermal systems with power towers, cooling towers, and other tall structures in excess of 200ft.

Nuclear Component

Some obstruction lights will be required for the nuclear plant since there will be structures above 200ft elevation including communication tower(s), met masts and other structures.

m. Site stabilization, protection, and reclamation practices

Solar Component

Although the site is located in a dry area with less than 6 inches of rainfall per year, it is located at the base of Yucca Mountain subject to strong storm water sheet flows as evidenced by the many dry stream beds crisscrossing the site (see Figures 1, 2, and 6). Therefore, an engineered drainage plan will be completed per the Nye County Code requirements and site stabilization/protection/ reclamation practices will be designed and implemented. The preliminary (30%) grading plan shows the typical road and culvert design (see Figure 5B and Exhibit 3) and indicates 44 culverts for Phase 1 (see Figure 2) with a similar number expected for each of the remaining 4 Phases. Under this plan, trenches excavated for underground utilities will be entirely refilled and no surplus soil is expected.

The array layout and site grading plan will be designed to minimize land degradation and the contractor will be required to carry out the whole of the work to avoid erosion and sedimentation within the site, surrounding areas, dust generation and sediment discharge. A geotechnical assessment will be conducted to take into account regional and site geology, geological hazards, soils assessment and soil landscapes to minimize potential impact on soils. The following reclamation practices will be considered;

- a) Divert surface runoff away from areas of earthworks or soil stockpiles;
- b) Reduce energy of surface flows in areas of potential erosion;
- c) Prevent sediment laden or contaminated water leaving the construction site;
- d) Reduce susceptibility of disturbed areas to erosion and include re-vegetation of disturbed areas;

- e) Implement control measures such as drains, culverts, diversion banks, sediment fences, geo-textile traps, straw bales, and
- f) At the conclusion of construction, all temporary tracks and areas disturbed by construction work including cable routes and hardstand areas will be reinstated and re-vegetated.

Since the PV solar collector only requires the grading of 200 ft x 175 ft flat areas (2% grade) the natural grade of the site can be left undisturbed and the environmental impact greatly reduced as opposed to other solar thermal technologies where the entire site has to be graded flat to within 1 to 2%.

The site stabilization and protection measures will include a detailed grading plan to minimize soil disturbance (protect the existing gradient and storm water flows) and install culverts as necessary to cross the dry washes. It is noted that the project will be in compliance with flood control plans since the Project site is generally located above the 100 year flood plain .

Nuclear Component

The same general site stabilization, protection, and reclamation practices will be employed for the nuclear plants as described above and will follow more stringent NRC requirements.

3.0 RELATED FACILITIES AND SYSTEMS

a. Transmission System Interconnect

i) Existing and proposed transmission system

The existing transmission system infrastructure of the Valley Electric Association (VEA) includes two 138kV lines which crosses the Project site (see Figure 7). One of the lines is being upgraded to operate at 230 kV in the near future. It is expected that VEA would interconnect the first 100MW (Phase 1) at 138kV. The remaining 400MW (Phases 4-5) may require additional reinforcements of the VEA system under the Nevada Renewable Transmission Accessibility Office (RETAAC) (see Figure 8) and a 230kV substation and 230kV interconnect may be required for these phases. The interconnection queue typically has some fallout (un-built projects) and may therefore reduce the reinforcements required for VEA to absorb this additional capacity. VEA has indicated a willingness to assist and to cooperate with this interconnect work as detailed in Attachment 1. A sketch of the existing and proposed transmission system is shown in Figure 9D. At this time, VEA has not submitted to the BLM the SF299 applications for upgrade to the 138kV/238kV lines and substation at Johnnie (see Ref 10). ReTco has submitted to the BLM the SF299 applications for the solar Express 500kV 1500MVA lines and substation at Johnnie.

The ReTco 500kV Solar Express line and DOE Corridor 386 is planned to be used for the subsequent phases (see Exhibit 4).

ii) Ancillary facilities and substations

Solar Component

Each phase of the Project will require a transmission line interconnection (see Fig 9) and no other ancillary facilities.

Nuclear Component

The nuclear component will utilize the planned Retco 500KV line and Amargosa Valley substation and other new transmission facilities per DOE Corridor 386 as necessary (see Exhibit 4) .

iii) Status of Power Purchase Agreements

This Project will be bid in to the solicitations issued by water agencies for renewable energy since MWD's Hoover Dam agreement ends in 2017 and LADWP is seeking qualified renewable energy sources to meet their demand.

iv) Status of Interconnect Agreement

The proponent in the process of completing the VEA interconnect application and ReTco /CAISO interconnect applications. The anticipated completed application date is December, 2010.

v) General design and construction standards

Solar Component

The Project will be designed and constructed in accordance with Utility Practice for the methods, specifications, standards of safety, manufacture, supply, delivery, construction, testing, and commissioning (including standards relating to the operation and maintenance of the completed Project) and applicable regulations for the design, manufacture, supply, delivery, construction, testing and commissioning industries of facilities similar to the Project and which, with respect to any objective, may be expected, in the exercise of reasonable requirements, to accomplish the same in a manner consistent with applicable Legislative requirements, reliability safety and environmental protection. The PV utility equipment is shown in Appendix A.

Nuclear Component

The Nuclear Component design and construction will follow NRC rules and regulations.

b. Gas Supply Systems

i) Backup natural gas generation requirements

Solar Component

In contrast to other solar technologies, including CSP and solar troughs, the Solar Component t requires no back-up natural gas or diesel fuel as it utilizes solid state PV panels, which do not have moving parts, other than for optimal positioning.

Nuclear Component

There nuclear plant is equipped with steam boilers or steam turbines and may require natural gas for auxillary loads.

iii) Pipeline routing considerations and construction standards

None Required

iii) Metering stations

Each plant will have a utility metering station at the point of interconnection.

c. Other Related Systems

i) Communications system requirements (microwave, fiber optics, hard wire, wireless) during construction and operation

Solar Component

A communication link and remote transmission unit (RTU) will be installed at the control building for plant wide SCADA and utility dispatch (see Figure 9D). The RTU will be connected via a fiber optic to communicate with the host utility (VEA) via the existing OPGW cable in the 138kV/230kV line and/or PLC and/or microwave link. If necessary, a microwave communication system will be provided adjacent to each substation using a microwave tower.

Additional communication links for voice and internet service with the local telephone company will be established when practicable.

Site operations and maintenance will required the use of cellular and/or Radio frequency communication equipment.

Nuclear Component

In addition to the above communication equipment, the Nuclear Component will install redundant communication systems as required by NRC

4.0 OPERATIONS AND MAINTENANCE

a. Operation and facility maintenance needs

Solar Component

The Project will operate during daylight hours and work crews (staff of 5 for a 100MW Phase) will be on-site typically during normal working hours including site supervisor, technicians and administrator. The needs of the operation facility and maintenance crews including drinking water and sanitary facilities, which will be provided by bottled water and contracted sanitary management services or a septic field based on consultation with the BLM.

Nuclear Component

The Project will operate 24/7 and work crews (staff of 500 for a 1.1GW AP1000™ plant) will be on-site typically during normal working hours including site supervisor, technicians and administrator. The needs of the operation facility and maintenance crews including drinking water and sanitary facilities, which will be provided by bottled water and contracted sanitary management services or a septic field based on consultation with the BLM.

b. Maintenance activities, including panel washing and road maintenance

Solar Component

The PV maintenance activities include periodic inspections of equipment, preventive maintenance of tracking and electrical systems, and panel washing on a periodic (e.g. quarterly) basis. Water will be purchased from a nearby supplier.

The road maintenance includes periodic grading of the access roads (annually) to restore the road surface.

In contrast with other solar technologies including CSP and solar troughs, this PV Project requires no extensive maintenance facilities or operating activities since there are no steam boilers or steam turbines to operate and repair.

Nuclear Component

The nuclear plant maintenance activities are similar to the above description but involve and much larger staff and more comprehensive O&M tasks such as repairs and maintenance of motors, pumps, and other rotating equipment as dictated by NRC.

c. Operations workforce and equipment

Solar Component

A work crew (staff of 5 for a 100MW Phase) will be on-site during normal working hours to operate and repair the PV array and related equipment. They will be equipped with a utility vehicle for routine service and maintenance. In addition, each Phase will include a 2,000-gallon water truck. The typical site staff includes a Site Manager and four (4) Technicians to provide routine service and maintenance. Off-site crews will be called in as needed for warranty repairs and service on the substation/utility interconnect as well as road repairs and other work requiring construction equipment and/or other special equipment and tools.

Nuclear Component

The workforce for the nuclear plant is similar to above but the total headcount is 500 per plant.

5.0 ENVIRONMENTAL CONSIDERATIONS

a. General description of site characteristics and potential environmental issues (existing information)

While not devoid of resources, the Project area does not contain resources that cannot be avoided and/or mitigated based on the results of the preliminary biological and archeological/historical research on the site (see Attachment 2). A full assessment of resource issues will be conducted during the NEPA review process in consultation with the BLM as proposed in Table 9.

Table 9 – Proposed Key Site Surveys

Issue	Scope of Assessment
Visual	A visual impact assessment will be undertaken incorporating landscape analysis, view field identification, provision of photomontage and review of likely visibility at key viewpoints surrounding the Project. Potential mitigation measures will also be identified and assessed and documented in the EIS
Noise	A noise assessment will be undertaken in accordance with applicable Noise Assessment Guidelines.
Flora and Fauna	Will review vegetation of the site with a focus on desert species and vegetation, particularly those having conservation significance. Important areas of vegetation and fauna habitat will be identified and as far as possible such areas will be avoided by the development. Impact on such areas would only occur subject to agreement with relevant regulations and the necessary mitigation measures being incorporated in the project. Assessment of relevant avifauna species will be undertaken to identify potential impact at risk species.
Archaeological/historical	A heritage and historical assessment will be undertaken by a suitable specialist in conjunction with representatives of one or more stakeholder groups
Telecommunications	An assessment of services potentially impacted will be undertaken
Geology soils and geotechnical information	Information on these aspects will be compiled and incorporated in the EIS

Issue	Scope of Assessment
Tourism	The project's requirements for access will be assessed for the construction and operations stages and any impact on tourism will be assessed and mitigated.
Traffic Assessment	A comprehensive assessment will be made to coordinate traffic and normal operations with NDOT. Particular attention will be directed to consideration of the impacts associated with over-size and over-mass vehicles accessing the site during the construction phase.

i) Special or sensitive species and habitats

A preliminary search of YMP environmental reports did not identify any species of concern. However, this will be confirmed in the field surveys.

ii) Special land use designations

The BLM Master Title Plats indicate certain utility easements the properties (See Exhibit 5) and BLM will be consulted to allow use of these easements for Project construction.

iii) Cultural and historic resource sites and values

A preliminary search of YMP environmental reports did not identify any cultural or historic sites and value. However, this will be confirmed in the field surveys.

iv) Native American Tribal concerns

A preliminary search of YMP environmental reports did not identify any native American historic sites and values. However, this will be confirmed in the field surveys.

v) Recreation and OHV conflicts

Since the site is within a Restricted area, no OHV conflicts are expected. No recreation/OHV traffic was observed on the Project site during site visits and the site is outside any BLM designated OHV areas.

vi) Other environmental considerations

Other environmental considerations raised by BLM during the NEPA scoping meeting may include wild fire, herd management, and historic trails, and other issues which will be discussed with the BLM during the consultation process. There are no historic trails recorded on the Project area.

Solar Component

Visual Resources Management Plan

The cover of this report shows a typical PV installation using the same solar panels proposed for this Project. Photos of the site are shown in Appendix D and a VRM map will be provided as part of the EIS process after site access is granted by the BLM. The Project VRM inventory unit is defined as the area east of Interstate I95 north of the town of Amargosa Valley. Based on a preliminary site visit, and in the absence of a BLM VRM map posted for this area, the inventory

unit is expected to be designated a VRM Class 4 designation (Class 4 being of least value) based on the observed desert landform, creosote type of vegetation, adjacent scenery, scarcity and cultural modifications – elements that comprise “scenic quality” in accordance with the BLM’s visual resource management program. As shown in Appendix D, the existing site improvement include Interstate Highway I95, the VEA 138kV line across the site. Although the level of change to the characteristic landscape can be high for a Class 4 VRM area, every attempt will be made to minimize the impact of the Project through careful location, minimal disturbance, and repeating the basic elements of characteristic landscape (form, line, color and texture).

Storm Water Pollution Prevention Plan/ National Pollution Discharge Elimination System/USACE Section 404 Permits

Compliance with SWPPP will be provided as part of the EIS and site construction process as described in Sec 2 (m) since the disturbed area is greater than 5 acres. However, unlike conventional steam power plants, this PV Project is expected to be exempt from an operating NPDES and USACE Section 404 permit since there is no waste water discharge (other than the occasional washing of inert PV collectors). PV electric generating system fall outside of the industrial 11 categories of “storm water discharges” associated with industrial activity” (40 CFR 122.26 (b) (14) (i)-(xi) and CAS designations and, unlike conventional thermal solar systems such as CSP or solar trough, this PV Project is not a Category One “steam electric power generation” (40CFR 423) facility and is therefore exempt.

Cultural/Pale Resource Management Plan

Compliance with CPRMP will be provided as part of the EIS and site construction process

Dark Skies Initiative

Compliance with DSI will be provided as part of the EIS and site construction process to minimize light pollution.

Decommissioning and Site Restoration Plan

It is expected that the BLM solar ROW will include provisions to decommission the Project equipment and restore the site after the 30 year ROW expires similar to the existing BLM wind farm ROWs which typically require that the site be restored to its original condition including removal of all above ground plant and equipment and the covering of foundations with sufficient backfill.

Other

Proponent will work with BLM and other stakeholders to meet other considerations which may arise in conjunction with the planning and development of this Project.

Nuclear Component

The same general approach will be used to handle the other environmental considerations associated with the Nuclear Components described above with the addition of compliance with NRC rules and regulations. It is noted the sites for nuclear plants N-1 through N-6 were on sites 1A-C were selected so that the nuclear plant would not be visible from I95.

b. Mitigation measures proposed by applicant and included in POD

Applicant will consider any and all reasonable mitigation measures in the POD which are generated during the course of the BLM NEPA review process.

6.0 MAPS AND DRAWINGS

- a. **Maps with footprint of solar facility (7.5 min topographic maps or equivalent to include references to Public Land Survey system)**

See Figures 1A-C and Exhibit 6

- b. **Initial design drawings of solar facility layout and installation, thermal power conversion facilities, electrical facilities and ancillary facilities. These initial design drawings will typically be a 30% engineering and Civil Design package to adequately describe the proposed project and evaluate the design considerations for soils, drainage and watershed management.**

See Exhibit 8

- c. **Initial site grading plan**

See Exhibit 4.8

- d. **Maps with transmission facilities, substations, distribution, communications**

See Figures 1 A-C and Exhibit 4 and 8

- e. **Access and transportation maps**

The site is accessed from Interstate Highway I95 and the access road is shown in Figure 1. NDOT encroachment permit will be obtained during EIS/ construction phases.

References

1. BLM Decision Letter from Mark Chandler May 26, 2010 Ref N-0881562800 (NVS03000)
2. Steam its generation and use, Babcock& Wilcox, 40th ed, 1992

LEGEND

1.0 NUCLEAR COMPONENT

2.2GW Nuclear Component = 2xAP 1000™ 1.1GW units
 Labeled N-1 and N-2
 Typical plant footprint 770' x 1,610' (28 acres)
 Buffer Zone (no build) 45 to 2,000 acres

2.0 SOLAR COMPONENT

2.0GW Solar Component = 120 x 16.67MW clusters
 Labeled C1, R1 to Cn, Rn where n is the highest number
 Typical plant footprint Cn, Rn = 1,200' x 2,200'
 *unless shown otherwise

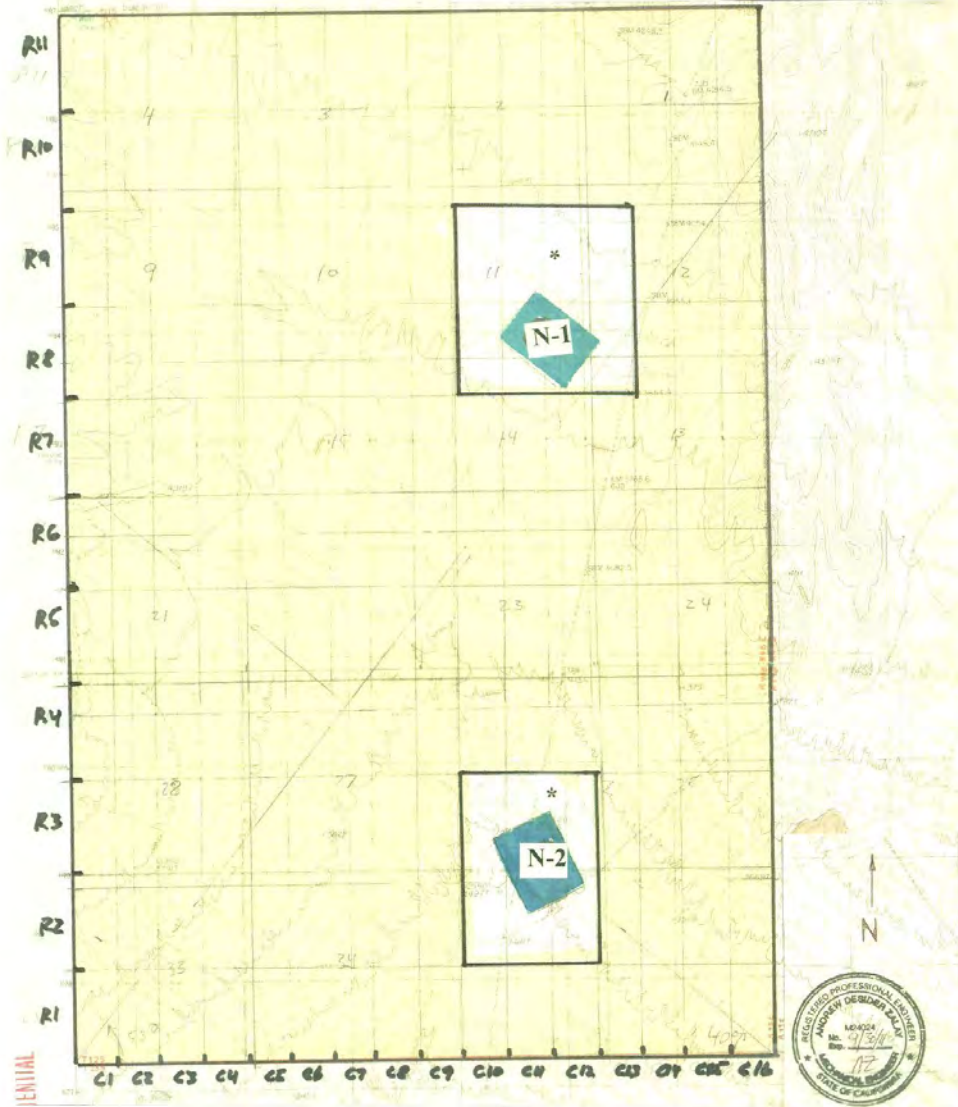


Figure 1A- Energy Park at Yucca Mtn: Site 1A-Crater Flat

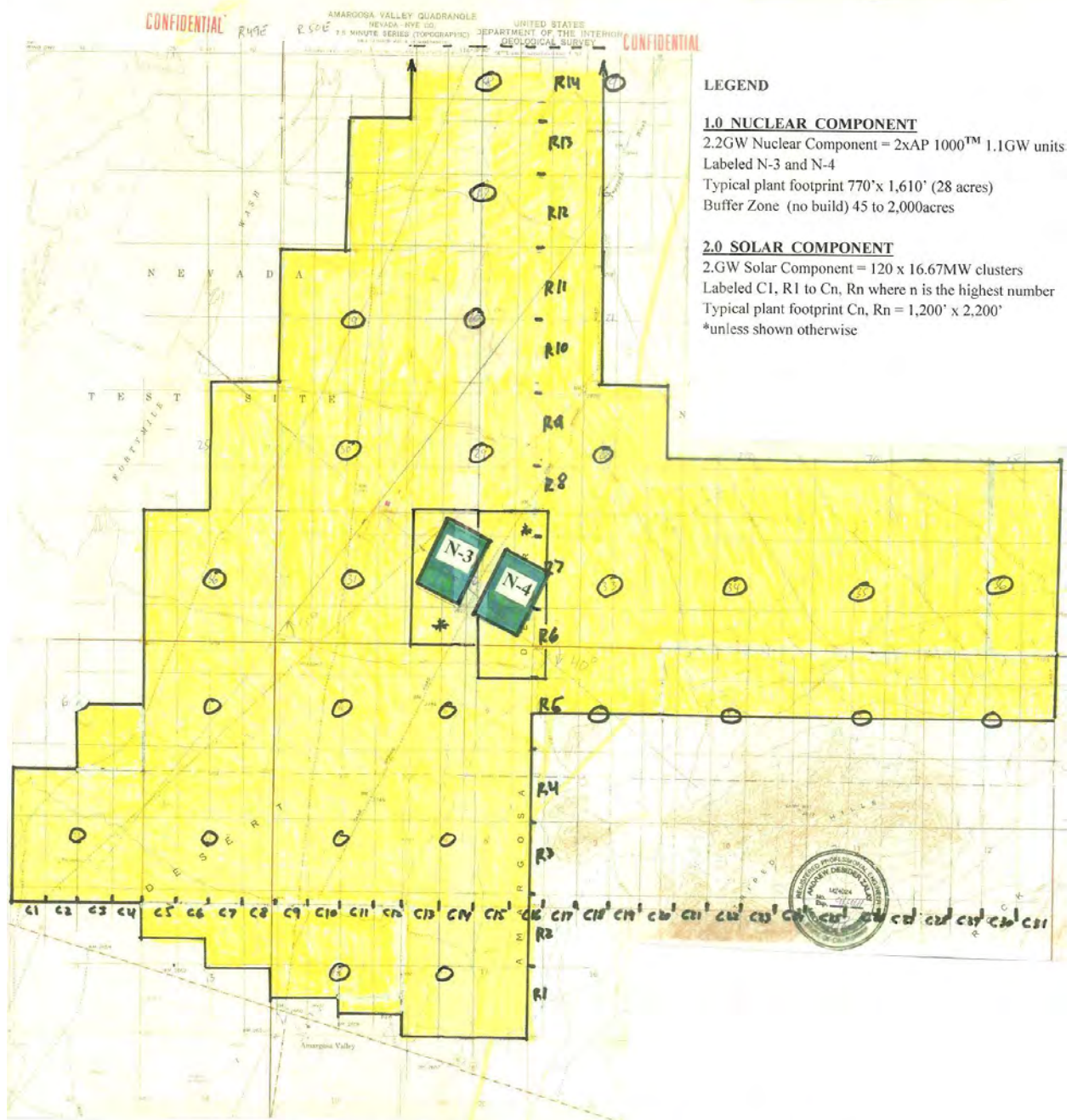


Figure 1B- Energy Park at Yucca Mtn: Site 1B-Striped Hills

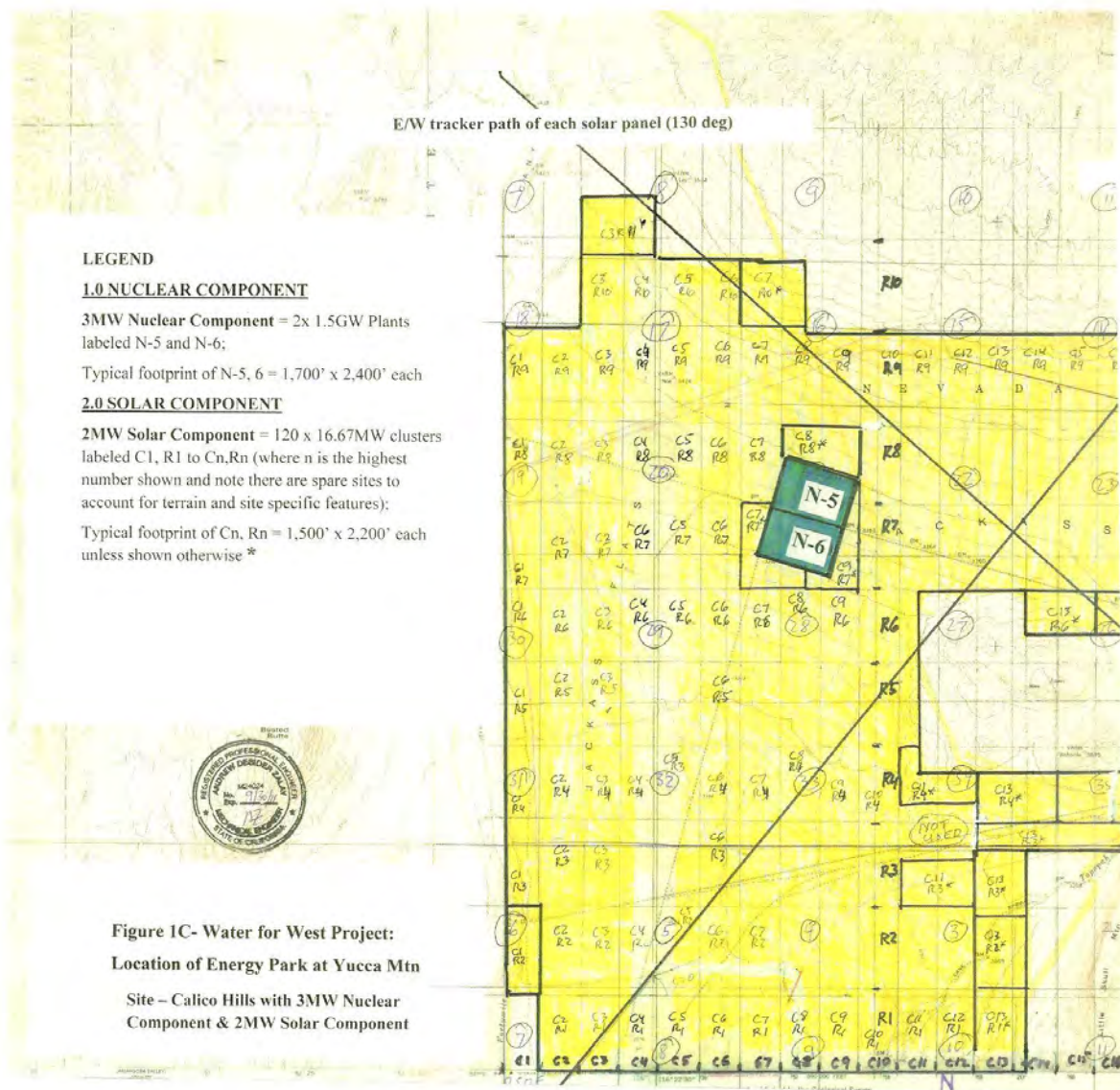


Figure 1C- Energy Park at Yucca Mtn: Site 1C-Calico Hills (west portion)

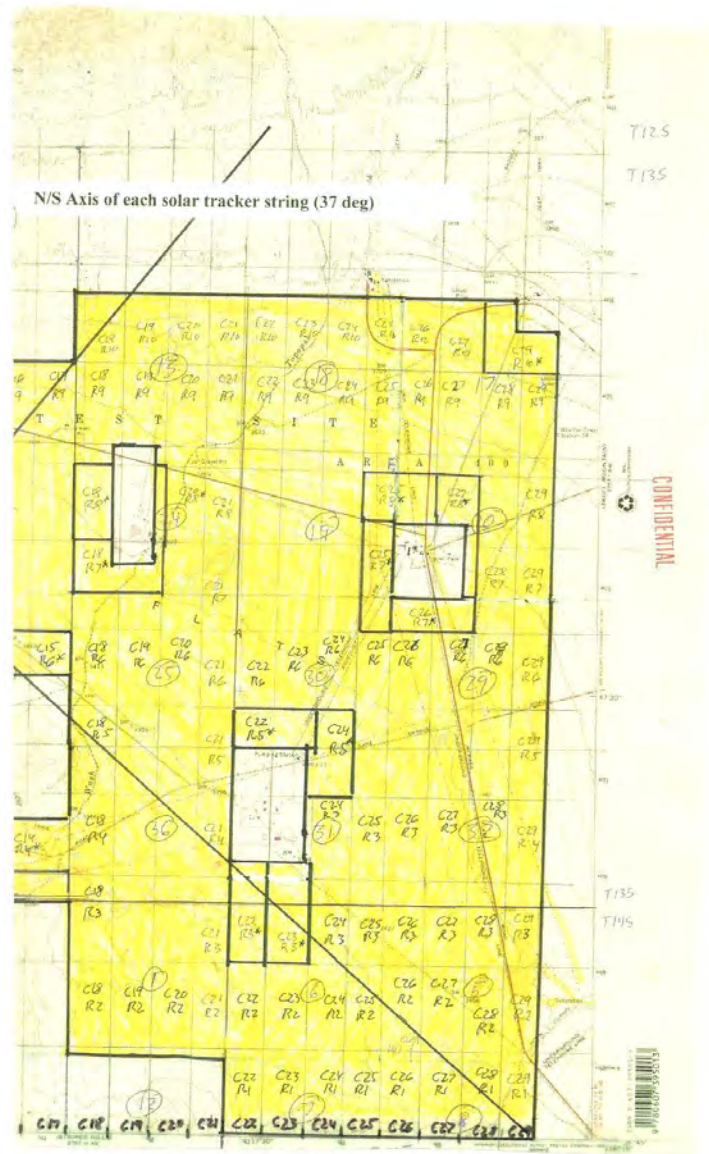


Figure 1C- Energy Park at Yucca Mtn: Site 1C-Calico Hills (east portion)

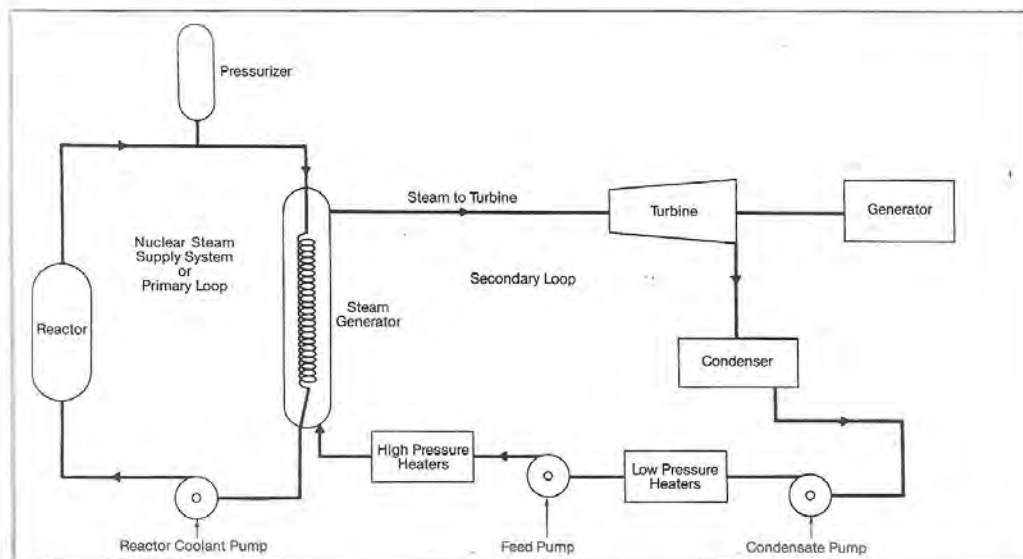


Figure 2N- Diagram of Typical Pressurized Water Reactor (PWR) System
 (ref. Steam its generation and use, Babcock & Wilcox, 40th ed, 1992)