An Integrated Waste-Management System and Consent-Based Approach to Siting

Consent-Based Siting Initiative Kick-Off Meeting

Renaissance Washington, D.C. Downtown Hotel

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WRITTEN RECORD

Keynote Speaker: Finding Long-Term Solutions for Managing Our Nation's Nuclear Waste

Dr. Lynn Orr, Undersecretary for Science and Energy, Department of Energy

Dr. Orr expressed that he was pleased to be at the event and to start the path forward for developing a long-term, sustainable solution for managing the nation's nuclear waste.

He acknowledged the assistance and contribution of Secretary Moniz in first announcing the start of the process last month, thanking him for his leadership, and also extending his thanks to his DOE colleagues for working hard in seeking out a solution to the difficult problem of consent-based siting that can work for everybody.

He noted that if you took an honest look at the long history of siting nuclear activities, you'd have to admit it's had its ups and downs. In 1949, the Atomic Energy Commission selected the site in Idaho to test the first-ever nuclear reactor, which caused a great deal of local celebration by municipalities, despite the fact that the AEC had set some quite-strict parameters for siting such facilities, which would be responsible for future points of contention.

Projects involving nuclear power plant disposal of nuclear materials have continued to be met with a mixture of both pride and concern by local communities.

He said that today the DOE is attempting to learn from that long and complex history, and to move forward in a way that will result in both a successful and durable storage solution.

Dr. Orr indicated that they were at the conference today to begin a conversation about designing a consent-based siting proposal for future nuclear-waste management.

He noted that the U.S. needs to get the consent-based process right, because the United States depends on nuclear energy for reliable, low-carbon electricity, and that it's hard to replace in a low-carbon way –a challenge made more difficult as the US works to seek to reduce carbon emissions further to avoid the worse impacts of climate change.

He noted that these are all reasons that the president's FY 2016 budget has a provision in excess of $900 million for DOE support for the US civilian energy sector, but that meeting long-term, nuclear-waste management needs is an absolutely essential component for ensuring that nuclear power continues to provide the country with safe, sustainable and responsible electricity generation.

Dr. Orr pointed out that the nation's defense and commercial electricity generation activities have generated significant quantities of spent nuclear fuel and some high-level radioactive waste. However, even though the Cold War ended a quarter century ago, and commercial nuclear power has been around for half a century, the nation still lacks a permanent disposal solution; instead, waste is stored at operating and shutdown reactor sites around the country.

While it's safe and secure in these locations, he noted that a long-term solution is needed to ensure that the public and the environment are protected.

Dr. Orr recounted how the Blue Ribbon Commission on America's Nuclear Future ended in controversy, litigation, and protracted delays, and was ultimately a failure, as there was no follow-up to address the problem based on the recommendations of that Commission.

He indicated that in 2013, DOE released a strategy for the management and disposal of spent nuclear fuel and high-level radioactive waste which outlines a three-step process involving:

Step 1: A pilot interim facility that would mainly accept waste from shutdown reactors. The purpose is to begin the process of accepting spent fuel from reactors while also developing and perfecting protocols and procedures for transportation and storage of nuclear waste.

Step 2: Development of a larger interim storage facility with more capability and capacity that would become part of a comprehensive system for the management of commercial nuclear fuel and allow the federal government to begin meeting its obligation to begin to accept spent nuclear fuel, to provide flexibility and improve overall system reliability.

Step 3: Moving toward one or more geological repositories for most spent nuclear fuel and high-level radioactive waste, since there is a consensus in the scientific community that geological repositories that would store nuclear material deep within the Earth's interior at scientifically proven locations does represent the safest and most cost-effective method of permanently disposing of nuclear fuel and high-level radioactive waste.

He noted that DOE had recently selected the team to test the concept of deep borehole disposal, for example, that could ultimately provide an additional disposal option to complement but not replace the overall, three-step strategy.

As DOE moves toward an integrated waste-management system, Dr. Orr emphasized that DOE is committed to earning the public's trust and confidence, and wants communities, tribes and states to be partners who have a say in where and how new facilities are developed in order to

ensure a long-term process that is successful, and that DOE is seeking the help of all Americans to develop a fair and effective approach to a consent-based system.

DOE will be accepting public comments via email at: consentbasedsiting@hq.doe.gov and will also hold a series of public outreach meetings. Dr. Orr said he could announce that the first two meetings will take place in Chicago in March and Atlanta in April.

In his closing remarks, Dr. Orr said he's optimistic that we now have a window in which we can begin a consent-based siting effort that will have lasting results, and in working to solve such problems, we are protecting the health and safety of all Americans, both now and in the future.

Panel Discussion

John Kotek, Acting Assistant Secretary for Nuclear Energy, Department of Energy

Mr. Kotek expressed his wish that this marks the beginning of a process that will deliver a more permanent solution to the back end of fuel-cycle development, through a consent-based siting process, as recommended by the BRC, and as embodied in the Administration's strategy.

He noted that the approach will inform the Department's planning for an integrated waste-management system, which they intend will transport, store and dispose of both spent fuel and high-level radioactive waste.

He reiterated his commitment to the three-tier strategy outlined by Dr. Orr above, and reviewed the same stages for development and deployment of the integrated strategy.

He emphasized the importance of public outreach and communication in the success of the strategy, pointing out that early, frequent and open dialog with the people in attendance at the meeting, as well as with potentially affected communities, is a cornerstone of any successful project.

He highlighted the fact that any effort to design an integrated waste-management system hinges on public acceptance, and that multiple phases of public engagement, each building on the other, will be required.

Phase 1 involves engaging with the public and interested groups to learn from them what elements are important to consider when developing the consent-based process, which is the work they are currently engaged in.

Phase 2 will focus on documenting the consent to serve as a framework for collaborating with potentially interested parties in host communities.

Phase 3 is to allow for modifications to plans, as events unfold, to adapt to unanticipated changes and challenges.

Mr. Kotek concluded his remarks by saying that today they turn to the audience to help them define what this process should look like going forward so at today's meeting initial thoughts can be shared on how they plan to learn from public engagement, so they can take the next steps needed to solve this decades-old problem.

He noted that they need to conduct this process in a way that's inclusive, adaptive and responsive, as well as transparent, and believe the public is deserving of having the standards upheld, and that they look forward to working with all interested parties on this issue.

Bill Boyle, Director of the Office of Used Nuclear Fuel Disposition, Office of Nuclear Energy, Department of Energy

Mr. Boyle began his presentation by pointing out that the goals of the Office of Nuclear Energy are to develop long-term, technically feasible and stable solutions, and his intent today is to provide an overview of the technical work the Office of Nuclear Energy has been doing with respect to all components of the waste-management system to support consent-based siting.

He noted that although the ultimate goal is disposal, there are additional efforts related to storage and transportation that are key elements in an integrated waste management system. These efforts are related to storage, transportation, and disposal – sometimes referred to collectively as disposition – and are split between first, research and development, and second, efforts laying the groundwork for interim, consolidated storage and preparing for large-scale transportation.

He began with a description of the efforts to lay the groundwork for interim consolidated storage. He noted that development of an interim consolidated storage capability was a key recommendation of the BRC, pointing out that an interim storage solution could enable the federal government to begin meeting waste-acceptance obligations sooner and ultimately could reduce liabilities caused by the delay in meeting the obligations.

Mr. Boyle also indicated that interim consolidated storage would additionally allow for greater flexibility of the system in the near-term, enabling fuel removal from shutdown reactor sites.

He summarized the work being done to support development of a flexible storage system in the following phases:

Phase 1: Development of pre-conceptual designs of generic interim-storage facilities;

Phase 2: Performing systems analyses that would help reduce costs and accelerate construction time, while promoting integration of storage into the waste-management system;

Phase 3: Evaluating potential system benefits of standardization and;

Phase 4: Compiling lessons learned relative to siting processes.

He indicated that with respect to large-scale transportation, no matter what form the integrated waste-management system takes, a carefully planned and developed transportation capability will be required to support all components of that system.

He noted that the planning and activities that have taken place related to preparing for large-scale transportation of nuclear waste have an initial focus on removing spent nuclear fuel from the shutdown reactor sites, and on key stakeholder engagement in keeping the focus on a consent-based approach.

As emphasized by Mr. Kotek, he reiterated that the DOE values the contribution from states and tribal nations, as they are responsible for the public health and safety within their jurisdictions and also provide a perspective that often challenges, and thereby strengthens, the decision-making in the development of the transportation system.

He summarized current work underway and transportation as follows:

1. Developing operational tools to support the understanding of potential routes, emergency-response infrastructure related to those routes, as well as performing analyses to understand the unique requirements that pertain to the shipment of the inventory from each reactor site.

2. Efforts underway relating to the transportation of spent nuclear fuel and high-level radioactive waste will support interim storage as well as deal with nuclear fuel and high-level radioactive waste.

Mr. Boyle then switched to a discussion of defense waste, noting that on March 24 of last year, Secretary Moniz laid out the path forward based on the finding by President Obama that the development of a separate repository for the disposal of high-level radioactive waste resulting from atomic-energy defense activities was required. He noted that the finding authorized the Department of Energy to move forward with planning for a separate repository for high-level radioactive waste resulting from atomic-energy defense.

He indicated that as DOE plans for defense waste repositories, the work will be informed by the consent-based siting process. He pointed out that the decision to move forward with the planning for a separate defense repository was based on changed circumstances, experience gained, and lessons learned over the last 30 years.

Mr. Boyle then focused on R&D.

He noted that ultimately, R&D is the foundation of all the technical work involved in moving forward on storage, transportation and disposal. R&D provides a sound technical basis for disposition, increases confidence in the robustness of generic disposition alternatives for safe disposal and the robustness of generic disposition concepts, as well as provides the science and engineering tools needed to support disposition.

He indicated that specifically for storage and transportation R&D, this work includes efforts focused on storage of used nuclear fuel after extended storage and R&D on the storage and transportation of high burn-up used nuclear fuel.

For disposal research and development, the work related to disposal includes:

1. Providing a sound technical basis for multiple, viable disposal options in a range of geologic media such as clays and shales, salt and crystalline rock;

2. Identifying alternative generic disposal technologies;

3. Evaluating the technical feasibility of the direct disposal of existing storage and transportation canisters, and;

4. Evaluating the feasibility of the deep borehole disposal option.

He concluded by noting that as DOE moves forward with a consent-based approach to siting in the United States, the Department will continue to look internationally for lessons and insights and will keep abreast of latest developments in other countries' waste-management programs.

Andrew Griffith, Associate Deputy Assistant Secretary for Fuel Cycle Technologies, Office of Nuclear Energy, Department of Energy

Mr. Griffith indicated his enthusiasm in moving forward with a collaborative approach to this problem. He noted that it seemed important for the program to move forward with a durable solution to this very tough problem, and he provided details of and discussed how they hope to engage with the public and stakeholders to define a durable solution that can move forward through all the different aspects that have tripped it up in the past.

He specifically noted that the intent is to move forward with a listen-and-learn approach. He specified that while the staff has their own thoughts, they have studied others who have headed in this direction, but feel there's a lot more to learn in implementing a program in the United States built on the recommendations of the Blue Ribbon Commission and to learn from the many lessons that have been experienced around the world.

He provided a brief overview of the three elements that they are looking at applying this year in the process of developing a durable solution:

The first already started in December, with the Federal Register notice for an invitation for public comment. This Federal Register notice is included in each of the participant's packets. It provides a concrete mechanism for the conference participants to provide the panelists with their input. It consists of five questions that were displayed on screen. The first four are general, as they deal with the consent-based process, but the fifth question is an open-ended question where

they provide some structure to encourage thoughts on further items the staff does not know, and that they haven't considered, and this is the audience's opportunity to provide some input.

The second element is the public engagement part of the program, where they will be holding a number of public meetings. The first two locations are Chicago in March and Atlanta in April. This is intended to be a broad public engagement, involving public meetings. Beyond the first two meetings in Chicago and Atlanta, they do not yet have specific venues or dates, but they're working on those and intend to hold similar meetings across the country in each month on the order of about once a month which will give them the opportunity to have a good dialogue and to solicit verbal comments and to build out what they've learned so far, as well as to expand their awareness of other inputs from different people along the way. They also are looking at opportunities, such as webinar conference calls and updates, and will share the results of the webinars.

The third element was characterized as the most flexible element from the standpoint of their program. He noted that their intent is to make themselves available to meet with any stakeholder in any organization that is interested in holding a discussion. This involves making the staff available to meet individually during the public meetings with any interested stakeholders, with the intent of having multiple conversations, as well as taking advantage of opportunities such as the Energy Communities Alliance Meeting in Austin next month as well as the Waste Management 2016 Meeting in March.

Mr. Griffith concluded by noting that the team is dedicated to doing the government's work in finding a durable solution, recognizing that many people want to address this, and there are communities in the US that want to understand what they are considering and DOE welcomes having a discussion with them if they wish to continue to have that dialogue.

Question and Answer Session with Panelists

Q: What is meant by consent? Who consents? How can consent be demonstrated? When can consent be withdrawn, can flexibility be built into the process?

A: The BRC did not try to define consent – DOE hasn’t yet either. Part of the process is trying to understand what is important to people. An expression of consent by a willing and informed host community or tribal government could look different in different places. Referenced settlement agreement with the state of Idaho as an example in which the governor and the attorney general signed an agreement with the Energy Department that allows the Energy Department and the Navy to bring certain amounts of nuclear fuel into the state in return for clean-up commitments and other incentives, economic development funding with milestones, etc. After the state committed, there was an initial report that went on the ballot, and that was upheld by a vote of 63 to 37, and was then signed by the governor and then ratified so that's what consent looks like, but consent can be very different in different places, so it makes no sense to

define consent at the outset. When people can opt out will be part of the agreement. In terms of when can consent be withdrawn, the BRC suggested a state should be allowed to opt out up until the point that a license application is submitted for licensing. It was suggested what something like this might look like. The BRC took a look at this for a long time and was not able to come to a conclusion. So, to the extent that the people have an idea what consent might look like, tell us what you think.

Griffith: Consent is in the eye of the beholder. We are committed to trying to move forward with the community or state or tribal governments that are most invested in an integrated waste management system, and that priority is in the driver's seat. We're looking at a bottom-up approach that has broad support, not just locally, but in the state, and we want to build on that. Confidence-building, initially. There are many different options as you grow to understand the challenge as states consider hosting a facility; that confidence is built, but everyone involved recognizes that confidence and trust can be lost in a heartbeat if something happens that is not in everyone's best interest, so it really has to be a collective willingness to explore opportunities in everyone's best interest.

Q (from Elaine): The U.S. tried this voluntary siting before unsuccessfully, i.e. the nuclear waste negotiator in the past, why do you think this will work now?

A: Looking at experience globally, the nations that have had success have used an approach where they sought to partner with a willing and informed host community, and I think this provides the greatest opportunity for success; we could have a longer discussion on why the nuclear negotiator didn't succeed. Initially, they thought they were making a lot of progress, but then there was a change in administration. It was five or six years between the time of naming the negotiator and when they got started. In terms of why we think this is the best chance of success, we feel experience around the globe bears that out. We think this will give us the best chance of success.

Q: You described the process, but what is the ultimate product near-term, medium-term and long-term, etc.?

A: Materials exist right now, spent fuel and high-level waste, in various forms, in various locations, that need to be safely managed and over the very long term isolated from people and the environment. We have a responsibility to do something with it and we believe the knowledge we have today is protective of people and the environment in the long-term and so ultimately the scientific consensus globally is that a deep geological repository is the best way to proceed. So that's the over-the-long-term answer; in the very near term for us, and in the next year or so, it's understanding what people want to see in a process like this, and using that to inform the development, or at least the drafting, of a process that we think will work; getting

some feedback from people and starting a conversation on that, getting the conversation going, not necessarily with communities, tribes and states that might be willing to say yes right off the bat, but to learn more. If you look at the process the Canadians have used, for example, where they asked people what their values are, what considerations did they think needed to be incorporated, or reflected in the process, they then after seeking feedback and spending some time socializing and communicating with them, they started looking for expressions of interest and ended up with 21 or 22 communities that stepped forward and said they were interested, and in fact, they had to terminate the open call for expressions of interest, and now they're going through this process of working with these communities to figure out whether they meet the criteria, and now I think they are down to eight or nine.

Q: [From Heather at Prairie Island] With respect to a repository, have you determined what technical and geological media you are looking for? What media can be eliminated?

A: I would say that any geological medium that works will be considered, and any that don't work will be found to be deficient. For those of you who don't have much familiarity with the disposal program of the United States, I would encourage you to go look at Section 112 of the Nuclear Policy Waste Act of 1982, since it's spelled out in the law what should be considered. The regulations spell out those things you should consider including such elements as geological factors, including population density, transportation considerations, and by explicitly considering pre-closure aspects of the repository, as well as the post-closure aspects, and in some ways the pre-closure considerations are a good surrogate for things that should be looked at for a spent-fuel storage site as well.

Q: [Question from Kevin] Will consent be required for all the transportation corridor communities along road, rail and/or waterways needed to ship spent nuclear fuel and high-level waste to storage and/or disposal facilities?

A: There are certain regulations that are part of Commerce and that deals with Commerce and to the extent that consent weighs into that, we will consider that, but there are also other constraints; there are also certain security aspects of transportation routes that have to be considered. Clearly, in terms of transparency and transportation routes, the regulations are quite clear on that as well. Routes do have to be approved, however; the operational aspects of transportation become much more sensitive from a security standpoint, but clearly all the states and communities from an emergency response or preparedness standpoint and other aspects have to be well-informed. Clearly, as a program, when it comes to timing and transportation of material, I think listening to stakeholders about time frames to avoid if there are certain events underway on the schedule that the shipments could be adjusted. However, there are a lot of details that need to be worked out before we get into those types of operational issues as considerations. And I think the first part of

that is engaging with the states as well as local and county governments to the extent that we can have discussions to figure out how we can conduct such shipments; this would be quite helpful in the long run. Because as we stand up a transportation system for this type of endeavor, it will be a big effort and complicated, so the earlier we can have these types of discussions, the better.

Q: [From Mike McMahon] One of DOE's stated goals is to establish a pilot consolidated interim storage facility by 2021. What is DOE's plan to capitalize on the presence of volunteers' "interim storage sites in Texas and New Mexico?" These seem to present the best chance for achieving the DOE's stated goals within the timeframe.

A: [John] Certainly the emergence of these private initiatives in communities that have expressed interest in hosting such facilities before we even started this process is quite promising. It's one indication that a consent-based siting process in the US can work. In terms of going forward or working with one or more of these initiatives, certainly we'll engage in discussions with those folks as we are very enthusiastic about their very existence; as the Administration strategy was put together for example, the example there was a government facility would be constructed to serve as a pilot interim storage facility itself; there are some things that are different in the contracting space in dealing with one of these initiatives, but it's too early to say exactly what our engagement with them would look like over the long-term although it's promising in the short run.

Q: [Question via webinar from Phil] When will the other locations and dates for the future consent-based siting meetings be finalized?

A: [John] Where we are now is the months and locations for the first couple of meetings. Over the next several weeks we intend to nail down details and we have venues to line up and other commitments that we've got to balance and that are complicating things; but we're committed to ensuring that we've got ample notice for people who want to participate in these events. Please bear with us.

[Andy] Clearly we will be posting any updates on our website and we also understand that you have more things to do in your life other than check out our website every day, so if you're not on our distribution list for announcements, or if you want to ensure that you're on the distribution list for announcements, please send us your e-mail and express a willingness to be on the distribution list and we will send you updates as they occur and clearly the locations and venues of our public meetings around the country will be of great interest, I am sure.

Q: How will you ensure that this process lasts beyond the Administration change?

A: [John] With an initiative like this, that this Administration has taken on, a big part of our effort over this next year is going to be ensuring that we engage with you all and with folks around the country who have an interest in this issue, that we design a process, and that we move forward in a way that builds confidence, and gives people a feeling that this type of initiative can be made to work, and it gives people both inside the government and in tribes, local governments and states a reason to see it continue beyond this Administration. So I think that's our challenge over the next 12 months.

Q: How does this effort square with existing law, i.e., the Nuclear Waste Policy Act, which has not been repealed or otherwise amended?

A: [John] We're moving forward with anything that can be done within existing authorities. Full implementation of the strategy will require legislation.

Q: [From Jan via the webinar] Aren't deep boreholes already being used at Hanford?

A: [Bill] First, let's define what's deep. Just so everybody understands what we define as deep borehole for radioactive waste down to a depth of about 5 km – that's deep for disposal, but not for oil drillers, they go much deeper than that. So I do not have comprehensive knowledge of what has been put in boreholes at Hanford but I am willing to bet that nothing was put in a borehole drilled under 5 km at Hanford. So whatever is in a borehole at Hanford, it's not the same thing as what we're looking at in the deep borehole disposal that's part of our test near Rugby, North Dakota.

Q: [Diane] If the DOE takes title to the waste at an interim storage site, or an interim centralized storage site, what happens if no permanent site for the storage of that waste is found, and/or if the cask certification expires?

A: [John] This gets to the issue of how an interim storage facility doesn't become a de facto permanent storage facility. We intend to move forward with both disposal and storage. We think everybody involved in the program recognizes that a deep geological repository is the ultimate solution, so that's the direction in which we're all headed. In the BRC process you heard this concern that when exploring hosting of the site, their attitude seemed to be that we recognize that schedules aren't always kept when it comes to nuclear waste or anything else, and it will be on us to build in protections for ourselves, for our community, for the state, if something like that does transpire. An element in a consent-based siting negotiation would include that.

[Andy] We're already in a de facto situation like that where communities are expected to store spent fuel that's accumulated around its utilities, near their homes, and that's not exactly fair. We have to find a solution to move forward and to find a way to implement a system where disposal is the ultimate objective and if that means having interim storage sites to progress towards the ultimate objective and if we can figure out a way to do that in a consent-based durable way, and it can survive the various influences in the past, that's what we're all working toward.

Q: [Webinar from Don] Why is DOE trying to proceed with consolidated interim storage when 30 years' of experience with public and private consolidated storage sites shows that there is broad and enduring opposition to such facilities? Why not recognize non-consent?

A: [Andy] I'm an eternal optimist. Well, maybe not eternal, but I'm an optimist, and I think it's worth the effort to go forward and see if there are communities out there that want to have conversations; clearly, there are private programs out there that are moving forward and that may be pushing for a more near-term solution. But I think there are communities out there that have not fully engaged in this type of opportunity. And if they are truly out there, we welcome them to make contact with us and ask us whether we can have a conversation with them, and if it progresses in that direction great; if not, then those doubters might be correct.

Q: [Catherine] Will there be corridor input along transport routes?

A: [Andy] Clearly, transportation is a big part of our laying the groundwork for the future and as I said before it will be a significant enterprise so there's a lot of work there. In terms of some of the hardware that's going to be necessary to operate such a significant transportation activity, we have started the development of a prototype cask car and buffer car that meets the American Association of Railroad Standards that is designed toward minimizing derailment and other safety features; this is truly a rail car that is designed to avoid situations where cask containment is ever needed and if we can take those kinds of steps to minimize any kind of hazards to the public then I think we'll be able to have a safe and sustained transportation operation. And those are the kinds of things and the steps we need to take today to plan for the significant, expensive and complicated programs; but the better we can do in preparing for those programs and building those relationships with the states and developing the hardware, so that the need for a response is reduced, I think we'll be in a better place in the future.

Q: [Tim] Given the many unanswered technical and policy questions that have yet to be answered about high-level waste disposal and storage, why is this, the topic of consent, the first issue the DOE is trying to address?

A: [John] It's certainly not the first question DOE is trying to address. We've got a lot of experience in dealing with transportation of fuel, development of repository concepts, storage of spent fuel, you name it, lots of aspects to this. We are determined to pursue deep geological repository as an end-goal. In the interim we need to consolidate storage capability, which could really benefit the system as a whole. First and foremost, it would give us the ability to clear fuel out of shutdown plant sites, but there are also other benefits to the system as well, and given that we need repositories as an end-state, we would like to build storage facilities and we think now is the time to start the process of identifying communities that might serve as willing and informed hosts for such facilities, and we can work towards locating them.

Q: [Elaine] Some programs utilizing a consent-based siting process, such as Canada's, have target dates for repository. And this focuses interest on moving the process forward. How does this affect DOE's 2028, 2025, and 2048 target dates for disposal facilities?

A: [John] As was laid out in the Administration strategy, dates were set which rely on implementation of legislation. Over the long term, the BRC recommendations were: don't try to establish firm dates but instead give time bands within which you think certain things can be achieved, recognizing that as you go through a phased adaptive process you are going to learn things as you go, and based on new information and based on experience, your target dates might need to shift somewhat. We're determined to show continued progress in continuing to move forward, recognizing the path we set out on day one is probably not going to look like the path we traveled as we reach the final solution.

Q: [Jeff] If Nye County Nevada or another entity near Yucca Mountain presented to DOE a consent-based proposal to use the Yucca site, would DOE consider it?

A: [John] DOE is looking to work with states, tribes and local governments that can serve as willing and informed hosts and would consent to host the facility.

Q: [Lisa] To build trust in a consent-based siting effort, it will require DOE to engage with stakeholders in a more open and transparent manner than has traditionally been the case. Please describe how DOE will do this; specifically, what actions will DOE implement to communicate with stakeholders in a way that is open and transparent?

A: [John] That's what this process is designed to do and frankly I'm thrilled to see so many people here today who can start engaging with us on this. We want to get out and hear from communities outside of DC and hear from folks from across the country who have an interest in this and we want their input and their experience as well as their values to help inform the process that we pursue. One of the things that I think we didn't get during the Blue Ribbon

Commission proceedings, to the extent that I think we're going to need going forward, is input from folks who don't focus on these issues; when we did the BRC work it tended to be with people who were involved with their communities associated with nuclear power plant siting or tribal governments or state governments. I think in addition to hearing from folks who were well-versed on this issue, we need to hear from people who don't think about this day in and day out but whose values and principles and beliefs should help inform whatever process we use going forward.

[Andy] As a career federal employee nobody has to tell me what challenges we face in a bureaucracy. I think one of the toughest tasks we will have is to be able to work efficiently within the bureaucracy, but I think the proof is going to be at the end of the year when you tell us how we did. Our intention is, to the extent possible, to over-communicate through the mechanisms of having the public meetings as well as webinars, conference calls and e-mail exchanges; if you send a question to the consent-based siting e-mail address, we will answer that question; if there's no direct answer for you individually, we intend to use it to populate a frequently-asked-question area of our website. In addition, the announcements we plan on issuing via e-mail distribution, so those who want to be informed can be informed.

Q: How are other voices going to be considered when defining consent, examples: in Texas and New Mexico they are claiming they have consent. An unrelated question: It can't be called consent when local communities are opposed but aren't able to vote. But their local officials are saying that there is consent. So there is an overlapping theme here. Will you, the Department, support the requirement that a county or community be able to vote on whether there is consent?

A: [John] Part of the reason we're doing this is to get input on questions just like that. And frankly to see what input we get from the other communities and states from across the country. So it's too early to give a precise answer to any of those questions, but those are the types of things we want to explore over the next year and as we go throughout the process.

[Andy] In a community or scenario where elected public officials make decisions where the public disagrees, they can address it in the next election. We are looking for something that is durable, not expedient, and not dependent on the next election.

Q: [Kevin] The BRC made as one of its top recommendations replacement of the Department on spent nuclear fuel and high-level radioactive waste management due to decades of deep public distrust of DOE's past "performance." Why is DOE still driving this train? Does DOE intend to remain in charge, including constructing and operating consolidated storage in the 2020s and disposal around 2050?

A: [John] The Administration's strategy, like the BRC report, recommends establishment of a new organization to do this work over the long term. Having said that, it's important to note that DOE has the mission today, and it's important that we continue moving forward within the scope of existing legislation.

Q: [Catherine] Please explain the outcomes of a study to ensure transport and storage containers can be the same in reducing the need for transfer; all consent-based siting communities will need to know safety monitoring.

A: [Andy] That's a great question; that's an area where we're spending a lot of time looking at possible solutions. As I mentioned earlier, we've kind of backed ourselves into a scenario where we have different storage systems in different configurations across the country and now we are trying to consolidate this at, first, a pilot facility and a larger consolidated facility and we have to figure out how to accommodate a lot of different designs, a lot of different configurations and there are ways of doing that; we've done some studies on various ways of doing that and I think the key result is that it's doable; the question is how fast to do it in a way that is currently safe and efficient, in that order. But I think ultimately we are looking for a greater system that when the fuel is pulled out of the storage pool and initially placed in a transportation canister that that canister is not only designed for initial storage but is designed for transportation and disposal so it would be a more well-designed canister and somehow, somewhere along the way we can transition from a very kind of divergent, heterogeneous mix of different designs and move towards one of harmonization of designs and ultimately toward a truly systems approach where the fuel is managed; it's only handled once when it's placed in that first canister, and it is then transported, stored and disposed in that canister in the most efficient way.

Q: [Tim] Dr. Orr said that nuclear power will be hard to replace with a low-carbon energy resource. Is that DOE's official position on renewable energy storage and efficiency and demand management?

A: [John] I think what Dr. Orr was alluding to was simply scale; more than 60% of our carbon-free electricity generation these days comes from nuclear and it's an important component of our existing electricity-generation system. And as we look to the future and the need to de-carbonize, we'd like to see production over the long term to meet climate goals that nuclear is one of what we think of as a series of tools that the US and countries around the world are going to need to enable a low-carbon electricity-generation capacity.

Q: [Allison] How will consent be applied to future generations; for example, if the community chooses consent now and that same community in the future determined that they no longer wish to house high-level nuclear waste, how will this issue be resolved?

A: [John]. We will continue to seek input from folks in the social science community to help us address that and frankly when you think about this issue going forward, that's something that you expect a community or state or a tribal government to be mindful of – is that they're making their decision as to whether they want to potentially consider hosting a facility; so as we go through the process of working with communities to achieve this with states being willing and informed hosts, we would expect to be asked a lot of questions about the long-term outlook in terms of management of these materials so they can make an informed judgment as to whether they're making the right decision not just for today, but for the communities in the long-term.

Q: [Sam] What social science research is the department supporting to study this topic?

A: [John] We commissioned several papers through the BRC process that are still timely. As we go forward and as we hear the kinds of questions that are raised throughout this process, I think that will give us a rich opportunity to look at more areas of thinking worthy of more exploration in the social science community.

Q: [Tom] During the GNET process, private entities proposed DOE sites for reprocessing facilities. For the current effort on waste-management facilities, how can a private or non-DOE entity possibly propose a DOE site owned by the wider public? I anticipate this will not be allowed. Is this correct?

A: [Andy] It would be up to the community around that site and other DOE missions that support the site. It's an interesting twist on consent-based siting but if there's a sincere proposal out there by a community and the state is supportive of the effort as well as the tribal entities possibly involved, then it would be worth talking about.

Q: You are encouraging one-on-one meetings and small group meetings. How will these be documented? How will you maintain transparency while you engage in a series of private communications?

A: [Andy] I think at a minimum if we meet with a group on this subject, we would want to make it be known that we met with the group on the subject; we don't want to hold any meetings that are secret or behind doors; where some of them would have the impression that we have the power to make a deal that we don't; that we're just trying to have a conversation that we want to have. One of the conditions we would have established is that the discussion would at least be

acknowledged and posted in some form. I think the best scenario is that we would draft a summary of the meeting and then post that as well. I think that would be an appropriate and constructive way to make sure that we guard against some misconception that we are somehow meeting outside of a public and transparent manner.

Q: Has DOE secured funding for this multi-year process of defining the consent-based siting process? And what timeline do you estimate to establish for defining the process and for ultimately going out and commencing searching for consent-based siting locations?

A: [John] We acquired appropriations in FY 2016 late last month to move forward laying the groundwork for CBS. It's too early to say what FY 2017 will look like. The Administration's request to Congress will be on February 9 and we'll be able to talk more about it after then.

Q: If there already exists a host site willing to host the pilot plant, what are the main constraints preventing accelerated implementation at that site?

A: [John] We're looking for a durable agreement with an informed host, community or state or potentially a tribal government, so we want to use this time to get input from such parties on what a consent-based site ought to look like, and what states have already expressed an interest in participating; we hope to hear from them and to get a better sense from them what they think the process of working within that community or within that state would look like.

Q: Who is the decision maker of the process itself and its integration with system design, in governance?

A: [Andy] That decision will be made at a senior level of the Department. Whether that will be something the Secretary will make, or whether he will delegate it down to Dr. Orr or me is something we'll have a discussion about over the next couple of months.

Q: Will there be a public meeting on technical issues related to interim storage? Who should we contact on those issues? This is needed for consent.

A: [John] The Nuclear Waste Technical Review Board has held at least one meeting looking at this issue, probably more. That's one avenue for those types of discussions. If there are other specific issues that the questioner doesn't think are getting adequate treatment through the Review Board or things the NRC is doing, I'd love to hear that so we can evaluate whether that's something we should try to catalyze on our end.

[Andy] That includes the pre-conceptual type of design options that we're doing; as it gets reviewed and is made available on the website so that our technical work can be known and available for people who are interested.

Q: [Kevin] DOE often argues, as it did today in the context of a pilot consolidated storage site in the early 2020s, to retrieve stranded or orphan spent nuclear fuel at permanently shutdown nuclear power plant sites, which includes those that may be completely decommissioned except the spent nuclear material itself. This is a top priority. How about community groups such as in Big Rock Point in Michigan and the Citizens Awareness Network in the Northeast who explicitly say "not in our name?"

A. [John] From a systems perspective, if you go back to the recommendations of the Blue Ribbon Commission to start by clearing of the shutdown plants it would seem to have great benefits; from another person's perspectives, including the ultimate cost to the taxpayer who of course, is currently paying the judgments and settlements of lawsuits due to DOE's inability to move waste right now. From the broader perspective of the American taxpayer, it's been our belief that moving forward with consolidated storage is the right thing to do and through this process we welcome the views of these groups that were mentioned: states and communities around shutdown sites and others. We would be curious to hear what views we get on that subject.

Q: I'm concerned about the pro-nuclear rhetoric which claims that nuclear power is "green and carbon-free, and even a solution to our climate problems" when all the statements cannot be supported by facts. Question: will the consent-based siting process be a green light to allow more dangerous and waste-generating nuclear plants to be built?

A: [John] That's actually a good segue into my closing remarks because I know there are some people in this room and people on the webinar who certainly believe in the use of nuclear technology and some who don't. I accept that. The Administration's and the Secretary of Energy's view, for those listening the last couple of months, is that as we try to address this global climate challenge, we're going to need all of the tools that we can possibly muster and that includes nuclear; and nuclear offers a lot of advantages and potential advantages going forward that make it one of the options that this Administration believes we need to keep on the table and to continue to pursue aggressively as part of solving climate challenge both in the US and abroad. Regardless, when it comes to the nuclear-waste challenge whether we build more plants or not or currently operate the current plants or not, this stuff exists and we need to manage it safely and responsibly over the long term. And so I'm excited that we had the opportunity here today and going forward to begin an inclusive adaptive response that's transparent and that incorporates the consent-based siting effort that I believe can have lasting results.