



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
ENVIRONMENTAL
MANAGEMENT

Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste Implementation

Citizen's Advisory Board

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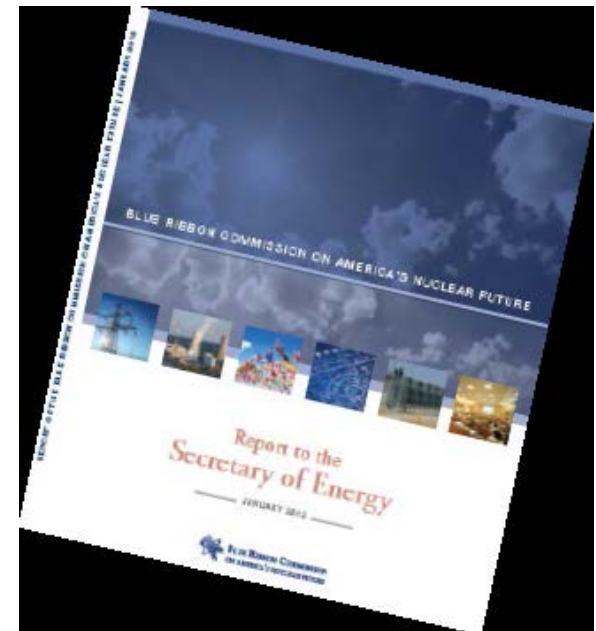
Topics for Discussion

- Blue Ribbon Commission (BRC) Background
- Summary of the Department's *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*
- Strategy Implementation:
- Near-Term Actions
- Summary

- Secretary of Energy Steven Chu announced the formation of a 15-person commission to conduct a comprehensive review of policies for managing the back end of the nuclear fuel cycle
- The Commission was co-chaired by former Congressman Lee Hamilton and former National Security Advisor General Brent Scowcroft
- The Commission provided recommendations for developing a safe, long-term solution to managing the United States' used nuclear fuel and nuclear waste
- The Commission released a draft report in July 2011 and the final report in January 2012.

BRC Background-Recommendations

1. A new, consent-based approach to siting and development
2. A new organization dedicated solely to implementing the waste management program and empowered with the authority and resources to succeed
3. Access to the funds nuclear utility ratepayers are providing for the purpose of nuclear waste management
4. Prompt efforts to develop one or more geologic disposal facilities
5. Prompt efforts to develop one or more consolidated storage facilities
6. Prompt efforts to prepare for the eventual large scale transport of spent nuclear fuel and high-level waste to consolidated storage and disposal facilities when such facilities become available
7. Support for continued U.S. innovation in nuclear energy technology and for workforce development
8. Active U.S. leadership in international efforts to address safety, waste management, nonproliferation, and security concerns



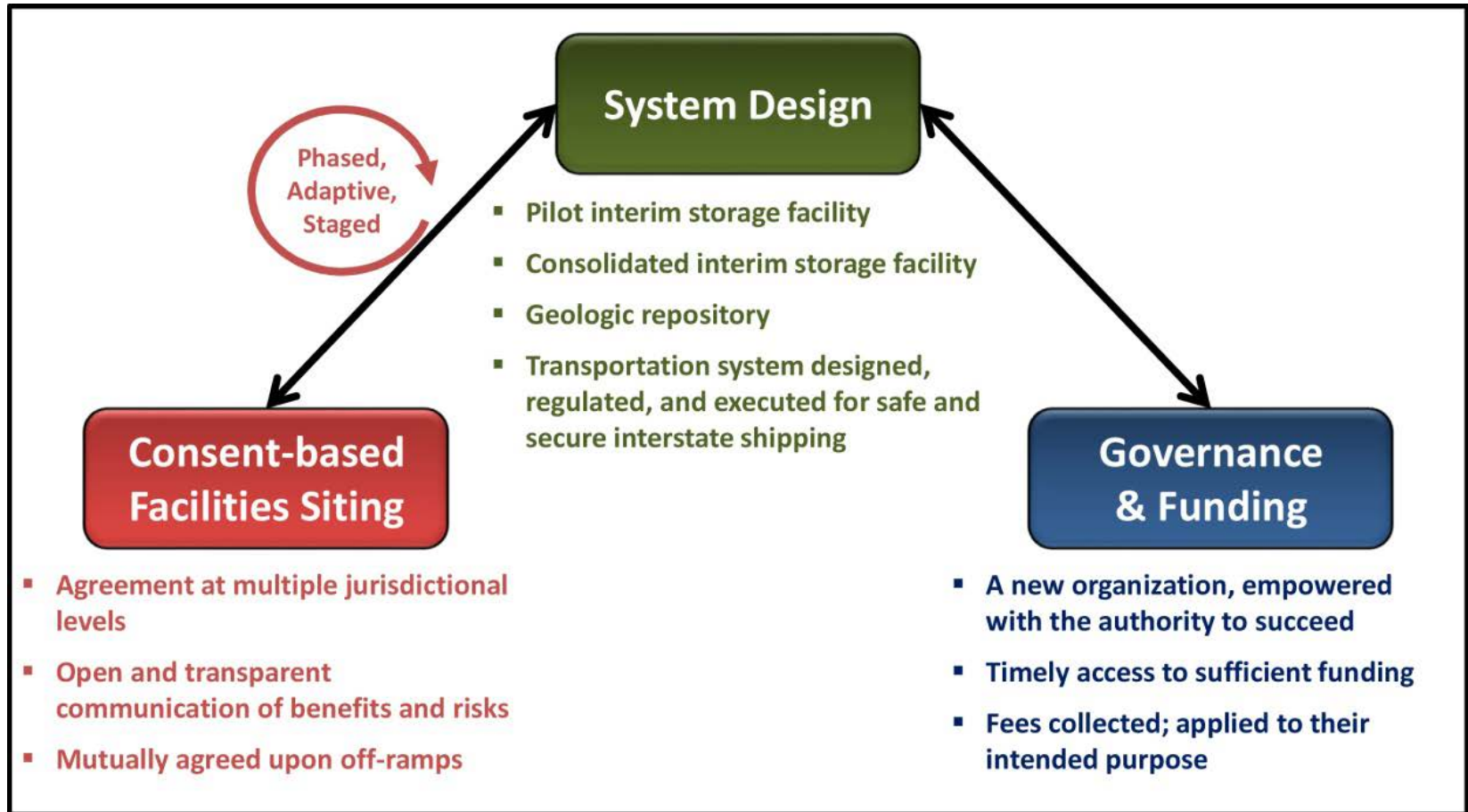
Summary of the Strategy for the Management and Disposal of UNF and HLW

- The Administration's Strategy addresses three important needs:
 - Serves as a statement of Administration policy regarding the importance of addressing the disposition of UNF and HLW, lays out the overall design of a system to address that issue, and outlines of the reforms needed to implement such a system.
 - Presents a response to the BRC recommendations. It also responds to direction in the Joint Explanatory Statement accompanying the Consolidated Appropriations Act, 2012, to develop a strategy for the management of UNF and HLW.
 - Represents an initial basis for discussions among the Administration, Congress and other stakeholders on a sustainable path forward for disposal of nuclear waste.
- The BRC report and recommendations provide a starting point for this Strategy. The Administration endorses the key principles that underpin the BRC's recommendations.

- With the appropriate authorizations from Congress, the Administration plans to implement a program over the next 10 years that:
 - Begins operations of a pilot interim storage facility by 2021 with an initial focus on accepting UNF from shut-down reactor sites;
 - Siting and licensing of a larger interim storage facility to be available by 2025 that will have sufficient capacity to provide flexibility and allows for acceptance of enough used nuclear fuel to reduce expected government liabilities; and
 - Makes demonstrable progress on the siting and characterization of repository sites to facilitate the availability of a geologic repository by 2048.

- Disposal of defense wastes alongside commercial wastes is the current policy in accordance with the 1985 decision to use a single repository for both commercial and defense wastes. The issue of “commingling” of wastes in a repository will be the subject of analysis moving forward.
- The Administration fully agrees with the BRC that a consent-based siting process is critical to future success.
- A new waste management and disposal organization (MDO) is needed to provide the stability, focus, and credibility to build public trust and confidence.

Summary of the Strategy-Key Elements



Strategy Implementation: Interim Storage Facilities

- **Facilities sited using consent-based process and licensed by the Nuclear Regulatory Commission**
- **Pilot-scale interim storage facility**
 - Focused on servicing shutdown reactors
 - Operational in 2021
- **Consolidated interim storage facility**
 - Larger capacity to provide system flexibility
 - Operational in 2025
- **Facilities could service environmental cleanup and defense sites**

Strategy Implementation: Geologic Disposal and Transportation

- **Geologic Repository**
 - Sited using consent-based process by 2026
 - Designed and licensed by 2042
 - Operational in 2048
- **Transportation**
 - Build on experience in industry and with WIPP
 - Capability to service facilities safely and securely
 - Ongoing planning activities provide foundation for implementation
- **One of each facility for now, possible additions based on consent-based process**

Strategy Implementation: Consent-based Process

- Consent-based process
 - Host jurisdictions to be recognized as partners
 - Consent required at multiple levels
 - Public trust and confidence necessary for success
 - Defining process and terms is critical initial step
- Future interactions with public and stakeholders
 - Potential announcement from DOE seeking input on potential siting approaches
 - Request for input and feedback from interested communities
 - Considerations on acceptance criteria for building an Interim Storage Facility

- **New Organization**

- Multiple workable models
- RAND study looked at independent government agency and government corporation models
- Critical attributes: accountable, autonomous, mission-oriented, stable
- No specific model endorsed at this time

Choosing a New Organization for Management and Disposition of Commercial and Defense High-Level Radioactive Materials

Lynn E. Davis, Debra Knopman, Michael D. Greenberg,
Laurel E. Miller, Abby Doll



Environment, Energy, and Economic Development
A RAND INFRASTRUCTURE, SAFETY, AND ENVIRONMENT PROGRAM

- Providing adequate and timely funding is critical to the success of the nuclear waste mission.
- The Strategy proposes a funding program that contains three critical elements:
 - Discretionary appropriations within existing spending caps to pay for specific, ongoing activities;
 - Reclassification of fee income or spending to make dedicated funds available in sufficient amounts without competing with other government priorities; and
 - Access to the existing balance of the Nuclear Waste Fund (\$28 billion) in the Treasury.
- Full implementation of this program will require legislation to enable the timely deployment of the system elements.

- The Administration, through DOE, is undertaking activities within existing Congressional authorization to plan for the eventual transportation, storage, and disposal of used nuclear fuel.
 - Initiating planning for a large-scale transportation program
 - Evaluating operational options for consolidated storage and furthering the design of a generic consolidated storage facility
 - Nuclear Waste Policy Act states construction of a Monitored Retrievable Storage facility may not begin until the Nuclear Regulatory Commission has issued a license for the construction of a repository.
 - Planning for initiating a consent-based siting process
 - Evaluating the inventory, transportation interface, and shipping status of used nuclear fuel at shut-down reactor sites
 - Engaging state and regional groups and tribal representatives on transportation planning and emergency response training consistent with NWPA Section 180(c).

- ...additional activities within existing Congressional authorization:
 - Conducting disposal-related research and development work on various geologic media, thermal scenarios, and disposal containers.
 - The Office of Nuclear Energy and the Office of Environmental Management (EM) are collaborating and have:
 - Embarked on review of past studies related to potential disposal of heat-generating wastes in salt;
 - Developed a re-entry plan to drill back and obtain data from past in-situ heater tests at WIPP in the 1980's
 - Developed new coupled models (thermo, mechanical, hydro)
 - Expanded temperature range of known physical properties of salt with focused laboratory studies.
 - EM continues to mine access drifts and install infrastructure using existing resources, to prepare for planned heater test which can inform future disposition plans.

- The Administration endorses the key principles that underpin the BRC's recommendations.
- The Strategy serves as a statement of Administration policy, responds to the BRC recommendations, and represents an initial basis for discussions among stakeholders.
- DOE has initiated activities consistent with BRC's near-term recommendations.
- A consent-based siting process is critical to future success.
- Disposal of defense wastes alongside commercial is the current policy. Commingling of wastes in a repository will be the subject of analysis moving forward.
- If a new organization is established, the Administration will carefully evaluate the appropriate activities to be transferred.