



UNITED STATES
NUCLEAR WASTE TECHNICAL REVIEW BOARD

2300 Clarendon Boulevard, Suite 1300
Arlington, VA 22201-3367

June 7, 2013

The Honorable Ron Wyden
Chairman
Committee on Energy and Natural Resources
United State Senate
Washington, DC 20510

The Honorable Lisa Murkowski
Ranking Minority Member
Committee on Energy and Natural Resources
United States Senate
Washington, DC 20510

Dear Chairman Wyden and Senator Murkowski:

The U.S. Nuclear Waste Technical Review Board was created by Congress in the 1987 amendments to the Nuclear Waste Policy Act (NWPA) to evaluate the technical and scientific validity of Department of Energy activities related to implementing the NWPA and to provide independent technical and scientific findings, conclusions, and recommendations on the management and disposal of spent nuclear fuel (SNF) and high-level radioactive waste (HLW) to Congress and the U.S. Secretary of Energy.

Consistent with the Board's mandate, the Board submits the enclosed comments, recommendations, and observations that are relevant to provisions of the discussion draft on Comprehensive Nuclear Waste Legislation released by the Committee on Energy and Natural Resources on April 25, 2013. The Board's comments are largely based on information from Board reports on international experience and are focused on provisions of the proposed legislation that will affect or be affected by technical issues.

The Board believes that the Committee should be commended for taking action on moving forward with a proposed approach for permanently disposing of SNF and HLW. The Board hopes the Committee will consider the Board a technical resource and will feel free to call on the Board to address questions related to the enclosed comments or to any other technical matter relating to SNF and HLW management and disposal.

Sincerely,

A handwritten signature in black ink, appearing to read "R.C. Ewing". The signature is written in a cursive, somewhat stylized font.

Rodney C. Ewing
Chairman

Enclosure

U.S. Nuclear Waste Technical Review Board
Comments on the Senate Committee on Energy and Natural Resources
Discussion Draft of Comprehensive Nuclear Waste Legislation
Released by the Committee on April 25, 2013

The U.S. Nuclear Waste Technical Review Board was created by Congress to evaluate the technical and scientific validity of Department of Energy (DOE) activities related to managing and disposing of spent nuclear fuel (SNF) and high-level radioactive waste (HLW) and to provide independent technical and scientific findings, conclusions, and recommendations on these issues to Congress and the U.S. Secretary of Energy. Consistent with the Board's mandate, the Board submits the following comments on the discussion draft on Comprehensive Nuclear Waste Legislation released by the Committee on Energy and Natural Resources on April 25, 2013. The Board's comments are largely based on information from Board reports on international experience with SNF and HLW management and disposal and are focused on provisions of the proposed legislation that will affect or be affected by technical issues.

Consent-Based Process

- "Consent-based" is not defined in the discussion draft. International experience supports the need for an explicit description of the consent-based process, including the conditions under which the implementer, a state, localities, or Native American Tribes (if applicable) may withdraw from the process to site and/or evaluate a site for a proposed nuclear waste facility. The consent-based process should clearly define the division of authority, roles, and responsibilities among the various levels of government. The consent-based process also should be tied to a logical sequence of scientific and technical determinations of the suitability of the site.
- International experience demonstrates the value of early engagement and partnership with affected parties, including states, communities, and Tribes and keeping them regularly informed throughout the process. To enhance understanding and ensure informed consent, along with relevant general information, technical information on the implications of hosting a nuclear facility should be widely disseminated among and discussed with the affected units of government.
- Based on international experience, in order to ensure informed consent, an agreement that includes terms and conditions negotiated among the parties should be executed *early* in the siting process.

Site Characterization

- Except in the definitions section of the discussion draft, the components and requirements of a site-characterization program for determining final site suitability before licensing are not clearly established in the proposed legislation. Additional detail is needed along the lines of the guidance provided in Section 113 of the Nuclear Waste Policy Act on the conduct of a site-characterization program. Understanding what a site-characterization program entails will be important information for potential voluntary hosts of nuclear waste facilities.

- The proposed legislation provides that at least one site be characterized as a repository and at least one site be characterized as a storage facility. Based on international experience, consideration should be given to characterizing multiple candidate sites in parallel as recommended by the Interagency Review Group in 1979 and subsequently by the Office of Technology Assessment.

Safety Case and Regulatory Standard

- Based on international experience, the safety case for disposing of HLW and SNF should be peer-reviewed and should include a synthesis of evidence, analyses, and arguments that quantify and substantiate the basis for a determination that a repository will be safe after it is closed. A well-developed safety case would make clear what sites might be suitable and what sites might be unacceptable, including to the extent possible, the health and safety requirements that must be met for the nuclear waste facility to be licensed.
- A process for establishing a health and safety standard is not included in the legislation. The Board notes that the Blue Ribbon Commission on America’s Nuclear Future recommended that “The standard and supporting regulatory requirements to license a facility should be generic—that is, applicable to all potential sites” and that “Safety and other performance standards and regulations should be finalized prior to the site-selection process.”

Implementing Organization

- Based on international experience, organizations that have as their sole purpose the long-term management of radioactive waste are more effective than multipurpose organizations; the particular form of the single-purpose organization seems less important.
- Because investigating and evaluating sites to determine their suitability as the location of a nuclear waste facility are inherently technical and scientific activities, individuals with technical and scientific expertise should be part of the management and oversight structure of the new organization. For example, a Chief Scientist should be designated to oversee all the activities that support the site-evaluation program, including site-characterization and research and development activities (e.g., analyses of waste form durability and waste-package corrosion). The membership of the Oversight Board also should be broadened to include additional technical and scientific expertise. Representation from academia, industry, public interest groups, state/local groups, and/or international nuclear waste programs should be considered. The Board strongly supports language in the discussion draft, which continues the Board’s ongoing independent evaluation of the technical and scientific validity of activities undertaken by the Administrator, and believes that the Board should continue to review activities that are retained by the Secretary related to the disposal and transportation to a repository of DOE-owned SNF and HLW. The Board also could make a valuable contribution as peer reviewer of the safety case developed by the Administrator.
- Especially if a single geologic repository is the disposal site for both SNF and HLW, activities related to disposing of commercial SNF should be fully integrated with efforts to dispose of DOE-owned SNF and HLW. Currently, one organization—the DOE—has responsibility for implementing a program for managing and disposing of these wastes. If, as a result of legislative changes, activities

such as research and development of the HLW waste form or packaging of HLW are managed by separate organizations, the roles and responsibilities of the organizations should be more fully defined in the legislation, and additional detail should be added on how the organizations will interact to ensure effective integration.

Transportation of Defense Waste

- Section 308 of the discussion draft should provide for transportation of defense waste from a DOE site to a storage facility or disposal site.

Responses to Questions 4 and 5 from the Committee List:

- Question 4: *To what extent should the siting and consensus approval process for spent fuel storage facilities differ from that for the repository? Should the Administrator be required to conduct sufficient site-specific research (referred to as “characterization” in the bill) on candidate storage sites to determine if they are suitable for storing nuclear waste or only on candidate repository sites to determine if they are suitable for geologic disposal of nuclear waste? Should the Administrator be required to hold public hearings both before and after site characterization (as required by current law in the case of the Yucca Mountain site) or only before site characterization?*

Answer: Yes. Given the preference for a co-located repository and storage facility cited in Sec. 304(d) (2), and the consent-based approach for determining sites that are eligible for review for hosting a nuclear waste facility, the Administrator should be required to conduct sufficient site-specific research on candidate storage sites to determine if they are suitable for storing *and* disposing of nuclear waste, *if* those sites also have been identified as potential sites for disposal.

- Question 5: *Should the siting process in section 304 of the draft bill be streamlined? If so, how?*

Answer: The determination in the discussion draft of whether a site is scientifically and technically suitable for development as a repository or storage facility requires that sufficient site-characterization information has been developed, through the siting process and site-characterization processes, to support an application for a construction authorization. The proposed two-stage decision-making process, which requires (1) evaluation of existing information for a decision on whether a site is suitable for characterization as a consolidated storage facility or a repository and (2) using the results of a full-scale site-characterization program to make a final determination of site suitability before submitting a license application, would appear to be appropriate for developing sufficient information for decision-making. It also would provide two distinct opportunities for affected parties to provide input at decision points in the siting process. Ongoing input from affected and interested parties throughout the process would support the consent-based process and the development of a sound scientific basis for decision-making.