

**U.S. NUCLEAR WASTE TECHNICAL REVIEW BOARD  
STRATEGIC PLAN  
FY 2002-2007**

## **Statement of the Chairman**

The U.S. Nuclear Waste Technical Review Board was established as an independent agency of the United States Government on December 22, 1987, in the Nuclear Waste Policy Amendments Act. Congress charged the Board with evaluating the technical and scientific validity of activities undertaken by the Secretary of Energy, including characterizing a site at Yucca Mountain, Nevada, for its suitability as the location of a permanent repository for civilian spent nuclear fuel and high-level radioactive waste. The Board also reviews activities related to packaging and transporting such waste. In creating the Board, Congress realized that an unbiased technical and scientific evaluation of the credibility of site evaluation and other high-level radioactive waste management activities would be crucial to public acceptance of any approach for disposing of the waste.

The Board strives to provide Congress and the Secretary of Energy with completely independent, credible, and timely technical and scientific program evaluations and recommendations achieved through peer review of the highest quality. The Board's technical and scientific findings and recommendations are included in reports that are submitted at least twice each year to the Secretary of Energy and Congress. The Board can make recommendations but cannot compel the Department of Energy to comply.

The attached strategic plan includes the Board's goals and objectives for 2002 through 2007. *If* the site is approved for repository development, much important technical and scientific work related to gaining a better understanding of potential repository performance will continue. In addition, the Department of Energy will need to finalize a repository design, establish a program for confirming projections of repository performance, and develop and implement plans for a waste management system, including transportation and packaging of the waste. Because many crucial technical and scientific decisions will be made throughout this period, we believe that the Board's ongoing independent technical and scientific review of these efforts will continue to be critically important.

On behalf of the Board,

Jared L. Cohon  
Chairman

## **Mission**

The Board's mission, established in the Nuclear Waste Policy Amendments Act (NWPA) of 1987 (Public Law 100-203), is to “. . . evaluate the technical and scientific validity of [high-level radioactive waste management] activities undertaken by the Secretary of Energy, including site-characterization activities; and activities related to the packaging or transportation of high-level radioactive waste and spent nuclear fuel.” By law, the Board shall cease to exist not later than one year after the date on which the Secretary begins disposal of high-level radioactive waste or spent nuclear fuel in a repository.

## **Vision**

By performing ongoing technical and scientific review and evaluation of the highest quality, the Board makes a unique and essential contribution to the Secretary of Energy’s efforts to implement the Nuclear Waste Policy Act (NWPA). If the recommendation of the site is approved, the Board will continue to perform critical technical and scientific peer review of technical and scientific work related to gaining a basic understanding of the potential performance of the Yucca Mountain site, of performance-confirmation work and repository design efforts, and of activities related to the waste management system, including transportation and packaging of the waste

## **Values**

To achieve its goals, the Board conducts itself according to the following values:

- The Board strives to ensure that its members and staff have no conflicts of interest—real or perceived—related to the Secretary’s efforts to characterize the Yucca Mountain site or to package and transport spent nuclear fuel and high-level radioactive waste.
- The Board members arrive at their conclusions on the basis of objective evaluations of the technical and scientific validity of the Secretary’s activities.
- The Board’s practices and procedures are open and conducted so that the Board’s integrity and objectivity are above reproach.
- The Board’s findings and recommendations are technically and scientifically sound and are based on the best available technical analysis and information.
- The Board’s findings and recommendations are communicated clearly and in time for them to be most useful to Congress, the Secretary, and the public. The Board encourages public discussion of its findings and recommendations at its meetings.

## **The NWTRB's General Goals and Strategic Objectives**

The national goal for radioactive waste management established by Congress in the Nuclear Waste Policy Act of 1982 (NWPA) and the Nuclear Waste Policy Amendments Act of 1987 is safe disposal of civilian spent nuclear fuel and high-level radioactive waste in a permanent geologic repository at a suitable site or sites. In the acts, Congress directed the U.S. Department of Energy (DOE) to characterize a site at Yucca Mountain, Nevada, to determine its suitability as the potential location of a permanent repository for spent nuclear fuel and high-level radioactive waste. Congress charged the U.S. Nuclear Waste Technical Review Board with reviewing the technical and scientific validity of the Secretary of Energy's activities associated with implementing the NWPA, including characterizing the Yucca Mountain site and packaging and transporting the waste. The Board's general goals have been established in accordance with its congressional mandate.<sup>1</sup>

### **General Goals**

To accomplish its congressional mandate, the Board has established four general goals.

1. Ensure that technical and scientific activities undertaken by the DOE related to characterizing and analyzing the natural components of a potential Yucca Mountain repository and predicting the performance of a potential repository establish a sound technical basis for a decision on whether to recommend the site for repository development.
2. Ensure that technical and scientific activities undertaken by the DOE related to evaluating and designing the repository and waste packages are well integrated and establish a sound technical basis for designing the repository system, including the engineered barrier system (EBS).
3. Ensure that technical and scientific activities undertaken by the DOE related to packaging, handling, and transporting spent nuclear fuel and high-level radioactive waste to a potential repository are well integrated and establish a sound technical basis for designing and operating a waste management system.
4. Ensure that technical and scientific performance-confirmation activities undertaken by the DOE establish a sound technical basis for operating a repository, reducing uncertainties related to repository performance, and revising repository and waste package designs. (Will apply only if the site recommendation is approved.)

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<sup>1</sup> In February 2002, the Secretary of Energy and the President recommended the Yucca Mountain site for repository development. If the State of Nevada disapproves the recommendation, Congress will debate a "Resolution of Approval" later this year. The Board's goals and objectives will be revised to reflect the outcome of these deliberations.

## Strategic Objectives

To achieve its general goals, the Board has established the following long-term objectives.

### **1. Objectives Related to the Natural Components of the Repository System and Predicting Repository Performance**

- 1.1. Evaluate the technical and scientific validity of DOE studies, testing, and analyses supporting a decision on whether to recommend the Yucca Mountain site.
- 1.2. Evaluate the analyses and investigations pertaining to hydrologic and other natural processes at the Yucca Mountain site and at related analogue sites that establish the foundation for predicting repository performance.
- 1.3. Review the technical and scientific validity of models used to predict repository performance.
- 1.4. Evaluate the DOE's progress in developing a safety strategy for the Yucca Mountain site.
- 1.5. Monitor progress in completing development of standards and regulatory guidelines for a potential Yucca Mountain repository.
- 1.6. Review the *Record of Decision* and maintain awareness of legal challenges to the final environmental impact statement (EIS) for a potential Yucca Mountain repository.

### **2. Objectives Related to the Engineered Components of the Repository System**

- 2.1. Evaluate repository and waste package designs, including the technical bases for the designs.
- 2.2. Review the progress or results of materials testing being conducted to address uncertainties about waste package performance.
- 2.3. Assess the integration of science and engineering in the DOE program, paying particular attention to the effects of site-characterization studies (e.g. modeling, testing, and analyses of thermal and mechanical effects) on repository and waste package designs.

### **3. Objectives Related to the Waste Management System**

- 3.1. Evaluate the accuracy and reasonableness of analyses, methods, and major assumptions used by the DOE in estimating health and safety risks associated with transporting spent nuclear fuel and high-level radioactive waste.

- 3.2. Review the adequacy of DOE plans for developing the transportation infrastructure and determine the effort needed to develop a large-scale transportation capability.
- 3.3. Review the adequacy of the DOE's plans for safely handling and packaging spent nuclear fuel and high-level radioactive waste for transport to a permanent repository.
- 3.4. Evaluate the effectiveness of the DOE's efforts to integrate the various components of the waste management system (packaging, handling, transport, storage, and disposal of the waste).
- 3.5. Review the DOE's plans for addressing public safety concerns and for enhancing safety capabilities along transportation corridors. This includes activities related to development of plans (e.g., route selection), coordination, accident prevention (e.g., improved inspections and enforcement), and emergency response.

#### **4. Objectives Related to Confirmatory Testing** (Will apply only if the site recommendation is approved)

- 4.1. Monitor performance-confirmation activities, including performance-confirmation planning, undertaken by the DOE that are designed to reduce uncertainties related to repository performance.
- 4.2. Monitor performance-confirmation activities undertaken by the DOE, and evaluate the need to revise repository or waste package designs on the basis of the results of such activities.

### Achieving the Goals and Objectives

Congress granted significant investigatory powers to the Board in the NWPAA. In accordance with the NWPAA, the Board may hold such hearings, sit and act at such times and places, take such testimony, and receive such evidence as it considers appropriate. By law, no nominee to the Board is employed by the DOE, the national laboratories, or DOE contractors performing activities related to spent nuclear fuel or high-level radioactive waste. The Board has adopted strong procedures that go even further to ensure that the Board avoids even the appearance of a conflict of interest.

Subject to existing law, the DOE is directed to provide all records, files, papers, data, and information requested by the Board, including drafts of work products and documentation of work in progress. According to the legislative history, in providing this access, Congress expected that the Board would review and comment on DOE decisions, plans, and actions as they occurred, not after the fact. The Board believes that it has adequate powers under current law to achieve its goals and objectives.

Much of the Board's information-gathering is done at open public meetings where the DOE, its contractors, and other program participants present technical information. The Board's five panels meet as needed and are organized around specific issue areas. The full Board meets three or four times each year. The Board also gathers information through field trips to the Yucca Mountain site, visits to

contractor laboratories and facilities, and informal meetings with individuals working on the project. Although the Board's information-gathering activities are carried out primarily to further the Board's review, they have the collateral benefit of promoting communication and integration of technical information within the DOE program and facilitating the dissemination of information among interested parties outside the program. Analyses of the information gathered by the Board are performed by its members, the Board's professional staff, and consultants hired to supplement the expertise of the Board and the staff.

In February 2002, the Secretary of Energy recommended the Yucca Mountain site for repository development to the President. The President then recommended the site. The State of Nevada will now decide whether to disapprove the recommendation. If the recommendation is approved, the DOE will eventually apply to the Nuclear Regulatory Commission (NRC) for a license to construct and operate a repository at the site. If the license is approved, the expectation is that testing will continue at the site to increase confidence in predictions of repository performance. The Board has reviewed the analytical processes as well as the technical information used by the DOE in making decisions about site recommendation. The Board also will review the technical and scientific validity of activities related to confirmatory testing and to transportation and packaging of spent nuclear fuel and high-level radioactive waste. The Board reports the results of its reviews at least twice each year to Congress and the Secretary of Energy. Additional communication occurs as needed. Such communications are available to the public either by request or on the Board's Web site at [www.nwtrb.gov](http://www.nwtrb.gov).

## Crosscutting Functions

Several entities and agencies share responsibility for the ultimate national goal established by Congress of packaging, transporting, and disposing of spent nuclear fuel and high-level radioactive waste in a geologic repository at a suitable site. Although there may be cross-cutting areas of interest, the Board's role is unique among those involved in managing high-level radioactive waste. For example:

- **Congress and the Administration, including the Secretary of Energy**, make policy decisions on what the national goals will be and how they will be implemented. The Board's role in this process is to help ensure that policy-makers receive unbiased and credible technical and scientific analyses and information.
- **State and local governments** comment on and oversee DOE activities. The Board's oversight activities are different in that they are (1) unconstrained by any stake in the outcome of the endeavor besides the credibility of the scientific and technical activities, (2) confined to scientific and technical evaluations, and (3) conducted by individuals nominated by the National Academy of Sciences and expressly chosen by the President for their expertise in the various disciplines represented in the DOE program.
- **Federal agencies** that have roles in achieving a safe waste management program include the DOE, the NRC, the Environmental Protection Agency (EPA), the Department of Transportation (DOT),

and the United States Geological Survey (USGS). The DOE is responsible for developing and implementing the waste management system and for planning and conducting research activities related to disposal, packaging, and transportation of spent nuclear fuel and high-level radioactive waste. The NRC is the regulatory body authorized to license the construction and operation of the repository to ensure protection of public health and safety and the environment. The EPA is the agency given the responsibility to issue health-based safety standards. The DOT is responsible for regulating the transportation of the waste. The USGS participates in site-characterization activities at the Yucca Mountain site. The Board's role is unique among these federal agencies: perform ongoing, independent review and oversight of the technical and scientific validity of the Secretary of Energy's activities relating to civilian radioactive waste management, including site characterization and packaging and transportation of spent nuclear fuel and high-level radioactive waste, and communicate its findings and recommendations to Congress, the Secretary of Energy, and the public. The Board's evaluation of the technical and scientific validity of the Secretary's activities related to civilian radioactive waste management complements and enhances the work of other agencies involved in achieving the national goal.

## Key External Factors

Some factors that are beyond the Board's control could affect its ability to achieve its goals and objectives. Among them are the following:

- **The Board has no implementing authority.** The Board is by statute a technical and scientific review body that can only make recommendations to the DOE. Congress expected that the DOE would accept the Board's recommendations or indicate why the recommendations could not or should not be implemented. However, the DOE is not legally obligated to accept any of the Board's recommendations.

To increase its effectiveness, the Board has developed procedures for increasing the relevance of its findings and recommendations for Congress, the Secretary, DOE program managers, and the public. The Board's recommendations and the DOE's responses are included in Board reports to Congress and the Secretary. If the DOE does not accept a Board recommendation, the Board's recourse is to advise Congress or reiterate its recommendation to the DOE, or both.

- **Legislation could affect nuclear waste policy.** Congress has considered nuclear waste legislation several times in the last few years. The effects of such legislation, if enacted, on the program or the Board's activities are not currently known.

The Board will evaluate the status of these external factors, identify any new factors, and, if warranted, modify the "external factors" section of the strategic plan as part of the annual program evaluation described below.

## **Evaluating Board Performance**

The Board believes that measuring its effectiveness by directly correlating improvements in the DOE program with Board actions and recommendations would be ideal. However, the Board has no implementing authority, so it cannot compel the DOE to comply with its recommendations. Consequently, a judgment about whether a specific recommendation had a positive outcome for the DOE program is, in most cases, (1) subjective and (2) an imprecise indicator of Board performance because implementation of Board recommendations by the DOE is outside the Board's direct control. Therefore, to measure its performance in a given year, the Board has developed performance measures. For each annual performance goal, the Board considers the following.

1. Were the reviews, evaluations, and other activities undertaken under the auspices of the goal completed?
2. Were the results of the reviews, evaluations, and other activities communicated in a timely, understandable, and appropriate way to Congress and the Secretary of Energy?

If both measures are met, the Board's performance in meeting the annual goal will be judged effective. If only one measure is met, the performance of the Board in achieving that goal will be judged minimally effective. Failing to meet both performance measures without sufficient and compelling explanation will result in a judgment that the Board has been ineffective in achieving that performance goal.

The Board will use its evaluation of its own performance from the current year, together with its assessment of current or potential key issues of concern related to the DOE program, to establish its annual performance objectives and develop its budget request for subsequent years. The results of the Board's performance evaluation are included in its annual summary report.

## **Congressional and Stakeholder Consultations**

In developing its original strategic plan, the Board consulted with the Office of Management and Budget, the DOE, congressional staff, and members of the public and provided a copy of the plan to the NRC and to representatives of state and local governments. The Board solicited public comment and presented its strategic plan at a session held expressly for this purpose during a meeting in Amargosa Valley, Nevada, on January 20, 1998. Copies of the Board's strategic plan and annual performance plans are available on the Board's Web site: [www.nwtrb.gov](http://www.nwtrb.gov).