

U.S. NUCLEAR WASTE TECHNICAL REVIEW BOARD



FISCAL YEAR (FY) 2018 CONGRESSIONAL BUDGET JUSTIFICATION

*INCLUDING BOARD PERFORMANCE GOALS FOR FY 2017-2018
AND
EVALUATION OF BOARD PERFORMANCE FOR FY 2016*

MAY 23, 2017



U.S. NUCLEAR WASTE TECHNICAL REVIEW BOARD

BUDGET REQUEST SUBMITTAL

FISCAL YEAR 2018

SUMMARY

The U.S. Nuclear Waste Technical Review Board is an independent agency in the Executive Branch of the federal government. The Board performs ongoing and objective peer review of the technical and scientific validity of activities undertaken by the Secretary of Energy under the Nuclear Waste Policy Act (NWPA) (Public Law 97-425, as amended), including the packaging, transportation, and disposal of spent nuclear fuel (SNF) and high-level radioactive waste (HLW). The Board also advises and makes recommendations to Congress and the Secretary on technical issues related to nuclear waste management and disposal.

The Board's Budget Request for fiscal year (FY) 2018 is \$3,600,000, which is the same amount as the agency's appropriation in FY 2017. The Board's request reflects its continued commitment to sound budgeting and cost-effective management practices.

ABOUT THE BOARD

The Board was established in the 1987 amendments to the NWPA to "...evaluate the technical and scientific validity of activities undertaken by the Secretary after the date of enactment of the Nuclear Waste Policy Amendments Act of 1987, including

- (1) site characterization activities; and
- (2) activities relating to the packaging or transportation of high-level radioactive waste or spent nuclear fuel."

In accordance with this mandate and in line with the Legislative History of the Nuclear Waste Policy Amendments Act (NWPAA), the Board conducts an independent peer review of DOE activities and provides expert advice to DOE and Congress on technical issues related to nuclear waste management and disposal. The law requires the Board to report its findings, conclusions, and recommendations to Congress and the Secretary not less than two times per year. The Legislative History makes clear that the Board cannot compel DOE to accept its recommendations, but DOE is expected to heed the Board's advice or clearly state why it does not. According to the NWPA, "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."

THE BOARD'S CONTINUING ROLE

When Congress amended the NWPA in 1987 to identify Yucca Mountain in Nevada as the sole site to be characterized for its suitability as a location for a deep geologic repository, concerns were expressed that without a comparison of sites, the technical and scientific credibility of the site-characterization effort might be questioned. Congress created the Board to ensure that an independent peer review of DOE's work related to developing a repository at Yucca Mountain and packaging and transporting waste would be undertaken.

For more than 20 years, DOE focused on characterizing the Yucca Mountain site and developing a license application for a deep geologic repository. During that time the Board conducted an ongoing review of these activities and reported its findings, conclusions, and recommendations to Congress and the Secretary of Energy. DOE submitted a license application (LA) for authorization to construct a repository at Yucca Mountain to the U.S. Nuclear Regulatory Commission (NRC) in June 2008. In early 2010, DOE petitioned the NRC for permission to withdraw the LA. Also in 2010, the Obama administration terminated funding for the DOE Office of Civilian Radioactive Waste Management, transitioned activities related to implementing the NWA to the DOE Office of Nuclear Energy, and established the Blue Ribbon Commission on America's Nuclear Future to make recommendations on managing the back-end of the nuclear fuel cycle. In 2011, the NRC suspended its review of the LA. In August 2013, the U.S. Court of Appeals for the District of Columbia Circuit ruled that NRC must resume consideration of DOE's LA for the Yucca Mountain repository, and in 2014, the NRC published Volumes 3 and 4 of its safety evaluation report (SER) on Yucca Mountain; Volumes 2 and 5 were issued in early 2015 (Volume 1 had been issued in 2010). Also in 2014, DOE issued a report that recommended disposal of some DOE-managed HLW and SNF in a separate geologic repository and raised the possibility that some small waste forms might be disposed of in deep boreholes.

From 2015 - 2017, DOE focused on preliminary work related to its "integrated waste management system," including interim consolidated storage, disposal of commercial SNF and DOE HLW in a geologic repository, and developing transportation infrastructure for moving SNF and HLW. Throughout this period, the Board has evaluated the technical validity of DOE activities related to the NWA and reported its findings, conclusions, and recommendations to Congress and the Secretary of Energy. The Board's objective and independent peer review of DOE activities related to implementing the NWA will continue to be indispensable to the credibility, successful implementation, and public acceptance of DOE's nuclear waste management program in the future.

THE BOARD'S PERFORMANCE PLAN FOR FY 2017-2018

On an annual basis, the Board identifies Performance Goals that support the accomplishment of Strategic Objectives established in the Board's Strategic Plan for the relevant period. The Board's Strategic Objectives for the period FY 2014-2018 are presented below, followed by the applicable Performance Goals for FY 2017-2018.

Strategic Objective #1: *The Board will continue its evaluation of DOE activities related to implementation of the NWA. Based on its evaluation, the Board will report its findings, conclusions, and recommendations to Congress and the Secretary.*

Performance Goal 1-A: the Board will continue to monitor or evaluate DOE activities related to the disposal, transportation, or packaging of SNF and HLW, including the following:

- Research and Development (R&D) related to the performance of high-burnup SNF during extended dry storage and transportation
- R&D related to degradation of dry-storage canisters

Performance Goal 1-B: In FY 2017-2018, the Board will continue to evaluate activities undertaken by DOE's Office of Environmental Management (DOE-EM) under the NWA that will affect the disposal, transportation, or packaging of HLW, including R&D planned by DOE on HLW forms, specifically on borosilicate glass degradation and long-term performance in a repository.

Strategic Objective #2: *The Board will develop objective technical information that will be useful to policy makers in Congress and the administration on issues related to SNF and HLW management and disposal. The Board will communicate such information to Congress and the Secretary in letters, reports, correspondence, and testimony.*

Performance Goal 2-A: In FY 2017-2018, the Board will finalize and issue a report on the management and disposal of DOE SNF stored at federal facilities. The report is the culmination of a study by the Board of, among other things, the status of DOE SNF and the facilities where it is stored, the condition of DOE SNF, and the amounts of DOE SNF being stored at Hanford, the Idaho National Laboratory, the Savannah River Site, and Fort St. Vrain.

Performance Goal 2-B: In FY 2017-2018, the Board will publish a report to Congress and the Secretary on technical information and issues related to the use of large canisters for dry-storage of SNF at utility sites and the impacts of the canisters on the waste management system, including transportation and disposal of SNF.

Performance Goal 2-C: In FY 2017-2018, concurrent with the report on dry-storage canisters referenced above, the Board will issue a report on a system analysis tool developed by the Board to support its evaluation of DOE activities.

Performance Goal 2-D: The Board will hold a meeting on June 21, 2017, on corrosion of HLW borosilicate glass and the performance of HLW borosilicate glass in a repository. The Board will convey to DOE its findings, conclusions, and recommendations from its review of DOE activities in these areas.

Performance Goal 2-E: The Board will issue a report on the performance of high burnup fuel during storage and transportation and the impacts on the waste management system.

Performance Goal 2-F: In FY 2017-2018, the Board will develop factsheets on issues related to its review of SNF and HLW management, and synopses of recent Board reports. The factsheets and synopses will be posted on the Board's website and used to inform decision-makers and members of the public on technical issues related to nuclear waste management.

Strategic Objective #3: *The Board will compile information and report to Congress and the Secretary on its findings, conclusions, and recommendations from experience gained from almost thirty years of reviewing the U.S. nuclear waste management and disposal program and from observing waste management efforts in other countries.*

Performance Goal 3-A: In FY 2017-2018, the Board will continue to bring up to date its Survey reports on programs in the U.S. and other countries with nuclear waste management programs. The updates will be posted on the Board's website.

ACHIEVING THE BOARD'S STRATEGIC OBJECTIVES AND PERFORMANCE GOALS IN FY 2017-2018

Authority under the Law - The Board has the necessary authority, under current law, to achieve its Strategic Objectives and Performance Goals.

Establishing the Strategic Objectives and Annual Performance Goals - The Board's Strategic Goals and Objectives are established in its current Strategic Plan, which covers the period FY 2014-2018. On an annual basis, the Board identifies shorter-term Performance Goals that will lead to the

accomplishment of the Strategic Objectives. Strategic Objectives and Performance Goals are included in the Board's annual Performance Plan. The Performance Plan plays an important role in the formulation of the Board's annual Budget Request Submittal.

Technical Analysis - Analyses of technical information are performed by Board members, who serve part time, with support from a small, full-time professional staff. On the basis of these analyses, the Board reports its findings, conclusions, and recommendations to Congress and the Secretary of Energy. When necessary, the Board is authorized to hire expert consultants to support its in-depth reviews of specific technical topics.

Evaluating Board Performance - The Board includes in its annual Budget Request Submittal an evaluation of the Board's performance in achieving its annual Performance Goals for the preceding year.

Focusing Board Activities - Board members and members of the Board's senior professional staff are assigned by the Chairman to lead or support Board activities, as appropriate. The Board maintains the option of organizing panels or working groups to help facilitate, integrate, and focus its technical review, and for other purposes.

Information Gathering - Much of the Board's peer review and information gathering takes place at open public meetings organized by the Board, where technical information is presented by representatives of DOE, its contractors, and other organizations involved in nuclear waste management,. At these meetings, Board members and Board staff question presenters, and time is provided for input and comments from interested members of the public. The Board holds two or three public meetings each year. The Board's public meetings are announced in the *Federal Register*, typically four to six weeks before the meetings are held. Board panels and other small groups of Board members and staff may hold other meetings, as needed, to investigate specific technical topics.

The Board also engages in site visits, visits to national laboratories and facilities, and meetings with DOE and national laboratory and contractor staff working on specific projects and programs. Board members and staff attend symposia and conferences related to the science and technology of SNF and HLW management and disposition. On occasion, Board members and/or staff travel to other countries to meet with organizations involved in the management of SNF and HLW to observe their technical programs and best practices, perform benchmarking, and assess potential analogs, among other things. The information gathered from these visits is used to enhance the Board's evaluation of DOE activities and to advise Congress and the Secretary of Energy.

Communicating Board Findings and Providing Access to Board Deliberations - On the basis of the Board's evaluations and other information, the Board reports its findings, conclusions, and recommendations to Congress and the Secretary of Energy. The Chairman and other members of the Board and Board staff testify before Congress, as requested. Board reports, testimony, correspondence and meeting agendas, transcripts, presentations, and public comments are posted on the Board's website at www.nwtrb.gov. The Board has increased public access to its deliberations through the "webcasting" of its open public meetings. Webcasts are archived and are available on the Board's website.

Management Goals for FY 2017–2018 - To enhance the effectiveness and efficiency of Board activities supporting its Strategic Objectives and Performance Goals, the Board has identified the following Management Goals for FY 2017-2018:

- The Board will maintain and enhance effective communications among Board members who are geographically dispersed. The Board will also facilitate communication among the

Board members and the senior professional staff members who support the Board's technical review of DOE activities from the Board's offices in Arlington, Virginia.

- The Board will continue webcasting its meetings and making available archived video recordings of the webcasts on its website.
- The Board will endeavor to conduct its ongoing review and obtain information on DOE activities in the most cost-effective means possible.
- The Board will take actions to ensure that institutional memory and expertise can be passed on to succeeding Board members and staff, as well as to Congress, the Secretary of Energy, and interested members of the public. The Board may also provide opportunities for undergraduates or graduate students in disciplines related to the backend of the nuclear fuel cycle to gain practical experience by participating in a summer internship program at the Board offices.
- The Board will regularly update its technical resources and capabilities and assess the core competencies of its professional staff. The Board will develop and implement initiatives to identify, recruit when necessary, and retain, highly qualified professionals with the expertise and related knowledge needed to support the work of the Board members and help the Board achieve its Strategic Objectives.

EVALUATION OF BOARD PERFORMANCE IN FY 2016

The Board uses the annual evaluations of its performance as input in developing its Performance Goals for the following fiscal year and revising, as necessary, its Strategic Objectives. The Performance Evaluation also is used as input to the development of the Board's budget submittal for the subsequent year.

Confidence in the basis for evaluating the Board's performance is high and can be verified by accessing the referenced documents and records of the meetings on the Board's Web site at www.nwtrb.gov.

EVALUATION OF PERFORMANCE RELATED TO ACHIEVING PERFORMANCE GOALS FOR FY 2016-2017

Following are the Board's Strategic Objectives and Performance Goals for FY 2016-2017 as they appeared in the Board's Budget Submittal for FY 2017, followed by an evaluation of the Board's performance in FY 2016 in accomplishing the Goals.

Strategic Objective #1: *The Board will continue its technical evaluation of DOE activities related to implementation of the NWPA. Based on its evaluation, the Board will report its findings, conclusions, and recommendations to Congress and the Secretary.*

Performance Goal 1-A: In FY 2016-2017, the Board will evaluate and report on DOE's efforts to implement its plan for disposing of DOE HLW and, perhaps some DOE-managed SNF, separately from commercial SNF. Consistent with recommendations to DOE in the Board's June 2015 Report, *Evaluation of Technical Issues Associated with the Development of a Separate Repository for U.S. Department of Energy-Managed High-Level Radioactive Waste and Spent Nuclear Fuel*, the Board will specifically review DOE activities related to:

- Research and development on waste form performance in different host-rock types after degradation of the waste package.
- Developing a better understanding of the degradation rates of DOE SNF in potential repository geologic environments
- Evaluating proposed approaches and cost-benefit analyses of DOE plans to potentially repackage cooler Naval SNF into smaller disposal packages
- Developing plans for using deep boreholes to dispose of some HLW, including examining sealing technology and assessing whether more robust engineered barriers may be necessary

EVALUATION OF BOARD PERFORMANCE IN FY 2016 RELATED TO PERFORMANCE GOAL 1-A.

- DOE reported at a meeting held by the Board on August 24, 2016, that Congress had not appropriated funding for DOE to pursue research and development activities related to developing separate repositories. The Board's review of DOE's work on deep boreholes is described under the evaluation of Goal 1-B, below.

Performance Goal 1-B: In FY 2016-2017, the Board's goals included hosting a workshop on deep borehole disposal of radioactive waste and issuing a report on Board findings related to DOE's evaluation of the feasibility of deep borehole disposal (see Goal 2-C).

EVALUATION OF BOARD PERFORMANCE IN FY 2016 RELATED TO PERFORMANCE GOAL 1-B.

- On October 20-21, 2015, the Board held an international technical workshop on deep borehole disposal of radioactive waste. The workshop focused on technical and scientific issues associated with the design and implementation of a program for deep borehole disposal of radioactive waste, and, in particular, the DOE's research and development program to assess the viability of deep borehole disposal. At the workshop, DOE presented its plans for studying deep borehole disposal, including a field test program.
- In January 2016, the Board issued a report to Congress and the Secretary, *Technical Evaluation of the U.S. Department of Energy Deep Borehole Disposal Research and Development Program*, detailing the Board's findings and recommendations following its review of DOE's research and development activities related to deep borehole disposal. The link to the report is here:
http://www.nwtrb.gov/reports/DBD_final.pdf

Performance Goal 1-C: In FY 2016-2017, the Board will review DOE activities related to the *DOE Strategy for Management and Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste*, including the following:

- Degradation of high-burnup SNF
- Degradation of dry-storage canisters
- Technical and scientific issues related to development of an interim storage facility
- Planning for a large-scale transportation program
- Evaluating options for transportation of SNF from shutdown reactors

EVALUATION OF BOARD PERFORMANCE IN FY 2016 RELATED TO PERFORMANCE GOAL 1-C.

- On February 17, 2016, the Board held a meeting in Knoxville, Tennessee to review DOE's research and development activities related to the performance and potential degradation of high burnup SNF during extended storage and transportation.
- The Board wrote a follow-up letter to DOE on May 23, 2016, in which it commented on DOE's research and development activities, including the High Burnup Dry Storage Cask Research and Development Project (HDRP), the study of the effects on SNF of the vibrational loads expected during rail or road transportation, and research to understand better the effect of hydride reorientation on cladding embrittlement. In its letter, the Board made three recommendations:
 - The research program should be structured so that the focus is on the likelihood and consequences of cladding failure during interim storage, transportation, possible repackaging, and eventual disposal of HBF in a repository.
 - DOE should develop a physical-chemical model that relates the behavior of unirradiated cladding to the behavior of irradiated cladding. This work should also include experimental work to test model predictions and evaluate the associated uncertainties.
 - DOE should make transparent how it integrates the results from Nuclear Energy University Programs and other relevant U.S. and foreign research activities into its overall research program on HBF degradation.
- On July 13, 2016, DOE responded by letter to the recommendations in the Board's May 23, 2016, letter. DOE's letter may be viewed on the Board's website at:
<http://www.nwtrb.gov/corr/doe071316.pdf>.

On June 3, 2016, The Board wrote again to DOE to comment specifically on DOE's report, Post Irradiation Examination Plan for High-Burnup Demonstration Project Sister Rods, which describes the characterization and experimental test activities proposed to be undertaken on 25 high-burnup spent nuclear fuel rods withdrawn from fuel assemblies in the HDRP. Noting that the test activities described in the plan will provide important data on potential degradation of high-burnup SNF during extended storage, the Board made several observations on the plan. The link to the letter is here:

<http://www.nwtrb.gov/corr/rce060316.pdf>

Performance Goal 1-D: In FY 2016-2017, the Board will continue to evaluate technical and scientific activities undertaken by DOE's Office of Environmental Management (DOE-EM) related to the management of SNF and HLW, including issues identified by the Board in its report on Management and Disposal of DOE-managed SNF (See Performance Goal 2-A).

EVALUATION OF BOARD PERFORMANCE IN FY 2016 RELATED TO PERFORMANCE GOAL 1-D.

- On August 24, 2016, the Board held a meeting on DOE activities related to integrating the management of the many different designs of canisters for SNF and HLW that are currently in service and under development. Representatives from DOE-EM presented

information on the casks and canisters being designed and used for DOE-managed SNF and HLW.

On December 8, 2016, the Board sent a follow up letter to Mr. John Kotek and Dr. Monica Regalbuto outlining the Board's recommendations from the August 24 meeting. The Board noted that it is not clear how DOE-NE's responsibility for transportation of SNF and HLW have been integrated with DOE-EM responsibility in the areas of transportation emergency planning and preparedness, packaging certification, and automated tools for transportation routing. The Board urged stronger integration between DOE-NE and DOE-EM in managing commercial SNF and defense SNF and HLW. The link to the letter is here:

<http://www.nwtrb.gov/corr/rce12816.pdf>

Strategic Objective #2: *The Board will develop objective technical information to advise Congress and the Secretary on issues related to SNF and HLW management and disposal. The Board will communicate such information to Congress and the Secretary in reports, correspondence, and testimony.*

Performance Goal 2-A: In FY 2016-2017, the Board will finalize and issue a report on the management and disposal of DOE-managed SNF stored at federal facilities. The report is the culmination of a four-year study by the Board of, among other things, the status of DOE-managed SNF and the facilities at which it is stored, the condition of the DOE-managed SNF, and the amounts of DOE-managed SNF being stored at Hanford, the Idaho National Laboratory, the Savannah River Site, and Fort St. Vrain.

EVALUATION OF BOARD PERFORMANCE IN FY 2016 RELATED TO PERFORMANCE GOAL 2-A.

- The Board plans to issue this report in FY 2017.

Performance Goal 2-B: In FY 2016-2017, the Board will publish a report to Congress and the Secretary on technical information and issues that will be important to decision-makers related to the implications of using large canisters for dry-storage of commercial SNF.

EVALUATION OF BOARD PERFORMANCE IN FY 2016 RELATED TO PERFORMANCE GOAL 2-B.

- The Board plans to issue this report in FY 2017.

Performance Goal 2-C: In FY 2016-2017, the Board will report on technical and scientific issues discussed at its workshop on deep borehole disposal, which will be held in October 2015.

EVALUATION OF BOARD PERFORMANCE IN FY 2016 RELATED TO PERFORMANCE GOAL 2-C.

- As discussed under the evaluation of Performance Goal 1-A, in January 2016, the Board issued a report to Congress and the Secretary, *Technical Evaluation of the U.S. Department of Energy Deep Borehole Disposal Research and Development Program*, detailing its findings and recommendations on deep borehole disposal.

Performance Goal 2-D: In FY 2016-2017, the Board will issue a report summarizing its activities since January 2013. The report will include archival material such as congressional testimony and correspondence to DOE and Congress.

EVALUATION OF BOARD PERFORMANCE IN FY 2016 RELATED TO PERFORMANCE GOAL 2-D.

- The Report was issued in FY 2017. The link is here:
http://www.nwtrb.gov/reports/summary_report_2016.pdf

Performance Goal 2-E: In FY 2016-2017, the Board will issue a report related to the Nuclear Waste Assessment System for Technical Evaluation (NUWASTE), a system analysis tool developed by the Board to support its evaluation of DOE activities. The NUWASTE Report will be a reference document, which will describe the tool and its capabilities. Included will be sample results to illustrate how NUWASTE can be used to analyze and compare different waste management strategies.

EVALUATION OF BOARD PERFORMANCE IN FY 2016 RELATED TO PERFORMANCE GOAL 2-E.

- The report will be published in conjunction with the report in Performance Goal 2-B in FY 2017.

Performance Goal 2-F: In FY 2016-2017, the Board will develop “factsheets” on technical and scientific topics related to DOE’s implementation of the NWPA. The factsheets will be posted on the Board’s website and used to inform policy makers and members of the public on technical issues related to nuclear waste management.

EVALUATION OF BOARD PERFORMANCE IN FY 2016 RELATED TO PERFORMANCE GOAL 2-F.

- In March 2016, the Board posted on its website six fact sheets, including an overview of SNF and HLW in the United States, and five fact sheets describing specific types of SNF and HLW in the United States. The link to the Fact Sheet page on the Board’s website is here: <http://www.nwtrb.gov/facts/factsheets.html>

Strategic Objective #3: *The Board will compile technical and scientific information and report to Congress and the Secretary on its findings, conclusions, and recommendations from experience gained over more than twenty years of reviewing the U.S. nuclear waste management and disposal program and from observing waste management efforts in other countries.*

Performance Goal 3-A: In FY 2016-2017, the Board will update and extend the analyses presented in the Board’s December 2009 Survey of National Programs Report.

EVALUATION OF BOARD PERFORMANCE IN FY 2016 RELATED TO PERFORMANCE GOAL 3-A.

- The Board released its report, *Survey of National Programs for Managing High-Level Radioactive Waste and Spent Nuclear Fuel: Update*, in February 2016. The report is an update of a survey report issued by the Board in 2009, in which the Board described technical and institutional attributes of nuclear waste programs in 13 countries. Neither the original Survey nor this updated Report makes judgements about any of the programs. Both reports focus on experience in the United States and other countries that will provide useful technical and scientific information for decision-makers in Congress and the administration on different approaches to managing and disposing of SNF and HLW. The link to the report is here:
http://www.nwtrb.gov/reports/survey_report_2016.pdf

Performance Goal 3-B: In FY 2016-2017, the Board will issue a report on designing a process for repository site selection, including discussion of the approaches that have been used by the United States and other countries.

EVALUATION OF BOARD PERFORMANCE IN FY 2016 RELATED TO PERFORMANCE GOAL 3-A

- The Board issued two reports on this subject in November 2015: *Designing a Process for Selecting a Site for a Deep-Mined Geologic Repository for Spent Nuclear Fuel and High-Level Radioactive Waste – Detailed Analysis*; and *Designing a Process for Selecting a Site for a Deep-Mined Geologic Repository for Spent Nuclear Fuel and High-Level Radioactive Waste – Overview and Summary*. The Board’s objective in writing both reports is to provide policymakers with information about efforts in the United States and other countries to site a deep-mined, geologic repository for HLW and SNF. In keeping with its technical mandate, the Board takes no position on whether a new effort should or will be undertaken to site a first or second repository. The link to the Overview report is here: http://www.nwtrb.gov/reports/siting_report_summary.pdf
A link to the detailed analysis is here:
http://www.nwtrb.gov/reports/siting_report_analysis.pdf

EVALUATION OF PERFORMANCE RELATED TO MANAGEMENT GOALS IN FY 2016

<i>Performance Goal</i>	<i>Evaluation of Performance</i>
<ul style="list-style-type: none"> • The Board will maintain effective communications among Board members who are geographically dispersed. The Board will also facilitate communication among the Board members and the senior professional staff members who support the Board’s review of DOE activities from the Board’s offices in Arlington, Virginia. 	<ul style="list-style-type: none"> ➤ In FY 2016, the Board continued to use an electronic “drop box” that facilitates Board member access to source literature, meeting materials, and draft Board documents. The drop box has provided improved access to the documents and reduced the need for production of multiple paper copies. The Board has initiated monthly updates and discussion via teleconferences.
<ul style="list-style-type: none"> • The Board will, to the extent feasible, enable access to the Board’s discussions and deliberations by interested members of the public. 	<ul style="list-style-type: none"> ➤ In FY 2016, the Board continued webcasting of its meetings. The webcasts have been successful; for example, a webcast of the Board’s August 2016 meeting was accessed 156 times during, and at least 100 times after, the meeting. The webcasts are archived and available on the Board’s website: www.nwtrb.gov.
<ul style="list-style-type: none"> • The Board will endeavor to obtain information and conduct its review in the most cost-effective means possible. 	<ul style="list-style-type: none"> ➤ When possible, the Board reduces costs and increases public participation by holding meetings in the vicinity of DOE facilities. The Board continued this practice in 2016 by holding a public meeting in Knoxville near the Oak Ridge National Laboratory in February and scheduling several follow-up fact-finding meetings at DOE venues after that meeting.
<ul style="list-style-type: none"> • The Board will take actions to ensure that its institutional memory and expertise can be passed on to succeeding Board members and staff, as well as to Congress, the Secretary of Energy, and interested members of the public. The Board will also provide opportunities for undergraduates or graduate students in fields related to the backend of the nuclear fuel cycle to gain practical experience by participating in a summer internship program. 	<ul style="list-style-type: none"> ➤ After reinstating its earlier practice of producing reports summarizing its activities and program developments for specified periods, the Board produced a report on Board on activities from 2013 through 2015 that was published in December 2016. The Board continued its summer internship program in FY 2016 with the objectives of providing opportunities for graduate students to gain practical experience and enhancing the support activities provided by the Board’s professional staff.
<ul style="list-style-type: none"> • The Board will regularly update its technological resources and capabilities and assess the core technical and scientific competencies of its senior professional staff. The Board will develop and implement initiatives to identify, recruit when necessary, and retain, highly qualified professionals with the technical and scientific knowledge needed to support the Board’s work and achieve its Strategic Objectives. 	<ul style="list-style-type: none"> ➤ In FY 2016, after an assessment of the scientific disciplines represented on the professional staff, the Board identified a need to hire a geoscientist. Also during this period, the agency provided training sessions aimed at honing the writing and communications skills of its senior professional staff, and continued to update some of its key IT systems to take advantage of recent technological advances.

U.S. NUCLEAR WASTE TECHNICAL REVIEW BOARD

Salaries and Expenses (Including Transfer of Funds)

For necessary expenses of the U. S. Nuclear Waste Technical Review Board, as authorized by Public Law 100-203, section 5051, \$3,600,000 to be derived from the Nuclear Waste Fund and to remain available until September 30, 2019.

DETAILS OF BUDGET REQUEST JUSTIFICATION

To fulfill its statutory mandate for reviewing the technical and scientific validity of activities undertaken by the Secretary of Energy related to nuclear waste management and for providing independent technical information and advice to Congress and the Secretary, the Board requests \$3,600,000 for FY 2018, which is the same amount as its appropriation in FY 2016 and \$7,000 above the FY 2017 Annualized Continuing Resolution. The Board's request reflects its commitment to efficient and cost-effective budget management practices.

A detailed explanation of the Board's request by Object Class follows.

Object Class 11.0, Salaries: \$2,036,000

The estimate for this object class includes funding for 11 part-time Board members, Executive Schedule senior professional staff, and General Schedule support staff. The 11 part-time Board members are Special Government Employees, and, in accordance with the Board's enabling legislation, each member is compensated at the rate of pay of Executive Schedule Level III. The senior professional staff members support the work of the 11 part-time Board members in evaluating the technical and scientific validity of DOE activities related to the management and disposal of SNF and HLW. The General Schedule staff members perform administrative activities related to the Board's ongoing technical and scientific evaluation and the operation of the organization. Administrative support activities include budget preparation and financial management, dissemination of Board publications, information technology activities, facilities management, travel planning, management of meeting logistics, and preparation and implementation of Board responses to federal directives. The amount requested for Board member and staff salaries includes provision for a pay raise of 1.9 percent

Object Class 12.0, Civilian Personnel Benefits: \$509,000

The estimate for this object class represents the government's contribution for employee benefits for staff and Board members.

Object Class 21.1, Travel and Transportation: \$250,000

The estimate for this object class includes travel costs for Board members, staff, and consultants who are required to travel to Board meetings, professional meetings, conferences, orientation activities, national laboratories, and other events and venues related to accomplishing the Board's strategic objectives and performance goals as detailed in the Board's Performance Plan.

Object Class 23.0, Rental Payments to the General Services Administration: \$240,000

The estimate for this object class represents the amount that the Board will pay to the General Services Administration under its contract for rental of the Board's office space in Arlington, VA.

Object Class 23.3, Communication, Utilities, Miscellaneous: \$40,000

The estimate for this object class represents costs for long-distance and local telephone service, postage, local courier services, video teleconferencing, webcasting support, internet, and mailing services. Based upon an analysis of actual spending in the previous fiscal year, the Board's request for this object class category has been reduced from the amount requested for FY 2016.

Object Class 24.0, Printing and Reproduction: \$40,000

The estimate for this object class is for costs associated with creating and publishing Board reports that are required by statute to be sent to Congress and the Secretary of Energy at least twice per year. The estimate also includes the costs associated with the publication of additional reports, and technical materials, as well as the costs associated with publishing meeting notices in the *Federal Register*.

Object Class 25.0, Consultants: \$50,000

The estimate for this object class includes funding for consultants to support and supplement Board and staff analyses of specific technical and scientific issues as authorized by Congress. Requested funding for this object class category also includes estimates for creative consultants to assist the Board in developing and implementing methods that will increase public on-line access to its deliberations, informational resources, and other Board matters.

Object Class 25.1/2, Contractual Services - Other: \$255,000

The estimate for this object class includes contractual costs associated with accomplishing the Board's mission. Estimated commercial contract costs includes meeting-room rentals, stenography and audio visual support services, webcasting, and video recording equipment rentals for Public Board Meetings, facility maintenance agreements, and professional development for Board supervisors and staff. Other program support contracts include services for contracted commercial IT support and report editing and production.

Object Class 25.3, Contractual Services - Federal: \$80,000

The estimate for the object class includes funding for administrative support services provided by other federal agencies such as payroll, accounting services, human resource related support related to management of official personnel folders, recording various personnel actions, and initiating personnel clearances. Also included is legal advice from the General Services Administration, security clearances through the Office of Personnel Management, building security services from the Department of Homeland Security, website hosting services from the Government Printing Office, and other support provided through miscellaneous interagency agreements. The Board's enabling legislation authorizes the procurement of necessary administrative services from the General Service Administration on a reimbursable basis. Based upon an analysis of actual spending in the previous fiscal year, the Board's request for this object class category has been reduced from the amount requested for FY 2016.

Object Class 26.0, Supplies and Materials: \$50,000

This estimate includes anticipated expenses for office supplies, subscriptions to technical publications and on-line academic journals and research databases, meeting supplies, and off-the-shelf technical reports and studies.

Object Class 31.0, Equipment: \$50,000

The estimate for this object class includes costs to purchase IT and other electronic equipment, including computer hardware and software. The object class includes funding for the continuation of upgrades and ongoing maintenance to the Board's IT and physical security equipment, continuity of operations (COOP), support of E-Gov telecommuting efforts, and technical support for the management and ongoing maintenance and upgrades of the Board's cybersecurity initiatives.

U.S. NUCLEAR WASTE TECHNICAL REVIEW BOARD

FY2018 Budget Request by Object Class
(Figures Rounded in Thousands of Dollars)

Object Class Code	Description	FY2016 Actual	FY2017 Annualized CR	FY2018 Request
11.0	Salaries	\$1,967	\$1,998	\$2,036
12.0	Benefits	485	500	509
21.1	Travel and Transportation	250	250	250
23.0	Rent	238	240	240
23.3	Communications and Utilities	65	40	40
24.0	Printing and Reproduction	40	40	40
25.0	Consultants	60	55	50
25.1/2	Contractual Services - Other	270	261	255
25.3	Contractual Services - Federal	100	84	80
26.0	Supplies and Materials	60	60	50
31.0	Equipment	65	65	50
Total Budgetary Request		\$3,600	\$3,593	\$3,600
Total Full Time Equivalent (FTE) Employees		14	14	14