



MEMORANDUM

April 08, 2024

TO: Members of the Subcommittee on Energy, Climate, and Grid Security

FROM: Committee Majority Staff

RE: Hearing entitled “American Nuclear Energy Expansion: Spent Fuel Policy and Innovation”

I. INTRODUCTION

The Subcommittee on Energy, Climate, and Grid Security has scheduled a hearing on Wednesday, April 10, 2024, at 10:30 a.m. (ET) in 2322 Rayburn House Office Building. The title of the hearing is “American Nuclear Energy Expansion: Spent Fuel Policy and Innovation.” The hearing will examine federal responsibility for permanent disposal of spent nuclear fuel and opportunities for mitigating disposal challenges, such as through reprocessing and recycling fuel, to advance nuclear energy for the nation.

II. WITNESSES

- **John C. Wagner, Ph.D.**, Laboratory Director, Idaho National Laboratory
- **Lake H. Barrett**, former Principal Deputy Director, Office of Civilian Radioactive Waste Management, Department of Energy
- **Daniel T. Stetson**, Chair, SONGS Community Engagement Panel
- **Greg R. White**, Executive Director, National Association of Regulatory Utility Commissioners

III. BACKGROUND

Since the Manhattan Project, the United States has accumulated high-level radioactive waste that requires permanent disposal. Use of nuclear reactors to power navy ships, as well as activities to maintain a nuclear deterrent has resulted in about 14,000 tons of defense waste located primarily in Washington State, South Carolina, and Idaho. For the purposes of this hearing, civilian commercial use of nuclear power to produce electricity has produced over 94,000 tons¹ of spent nuclear fuel (SNF), currently stored safely at seventy-five sites in thirty-four States, accumulating at a rate of approximately 2,000 tons annually.² About a quarter of the sites no longer have operating reactors.

¹ CURIE, Resource Portal for DOE Nuclear Waste Management Information, linked [here](#).

² See *Commercial Spent Nuclear Fuel: Congressional Action Needed to Break Impasse and Develop a Permanent Disposal Solution*. [GAO 21-603 September 2021](#). In addition, there are research reactors at other DOE sites (such as the National Labs) or non-DOE sites (such as universities) that also produce spent nuclear fuel. In all, DOE

Congress formally established the nation’s nuclear waste policy with the enactment of the Nuclear Waste Policy Act of 1982 (NWPA). NWPA created the Federal Government obligation to dispose of all high-level radioactive waste. The law established the Department of Energy (DOE) program and the objective, scientifically based process to select two sites for permanent geologic disposal. The law established a process to consult with and provide benefits to states, tribes, and local hosts of a site and obligated DOE to take title of commercially generated spent nuclear fuel (SNF) and remove and transport it for disposal beginning no later than January 31, 1998.³ The law established that nuclear utility ratepayers would pay fees—one tenth of a cent per kilowatt-hour of electricity generated by commercial nuclear plants—into the Nuclear Waste Fund to cover the disposal costs of the SNF, under the principle that those who benefit from nuclear-generated electricity should cover the disposal costs.

In 1987, after DOE conducted studies of nine potential repository sites located throughout the United States, Congress amended the NWPA and selected the Yucca Mountain site in Nye County, Nevada, as the only site for further study for the first national repository for SNF and high-level radioactive waste. Taking into account both pre-closure and post-closure concerns, DOE evaluations found Yucca Mountain consistently ranked at or near the top of the sites evaluated.⁴

In 2002, following extensive scientific and technical analysis by DOE and its national laboratories, the Secretary of Energy determined Yucca Mountain was suitable as a repository⁵ and Congress enacted a resolution formally designating the site for a repository.⁶ DOE subsequently prepared and submitted a license application to the Nuclear Regulatory Commission (NRC) for the Yucca Mountain facility in 2008.

In 2010, the Obama administration announced its intention, for policy not technical reasons,⁷ to abandon the Yucca Mountain project and made a motion to withdraw the Yucca Mountain license application from the NRC with prejudice. The administration dismantled the DOE office responsible for implementing the NWPA, terminated all activities to support the repository program, and established the Blue Ribbon Commission on America’s Nuclear Future (BRC) to conduct a review of policies for managing the back end of the nuclear fuel cycle, including alternatives for storage, processing, and disposal of civilian and defense SNF and high-level waste.⁸ In January 2013, DOE released a document titled *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*, which included a response to

reports that there are 121 sites in thirty-nine States that have SNF. See *Commercial Nuclear Waste: Effects of a Termination of the Yucca Mountain Repository Program and Lessons Learned*, [GAO-11-229 April 8, 2011](#), page 7. See also, [Storage of Spent Nuclear Fuel](#). U.S. Nuclear Regulatory Commission.

³ [Nuclear Waste Policy Act of 1982, as amended](#).

⁴ See *Recommendation by the Secretary of Energy of Candidate Sites for Site Characterization for the First Radioactive-Waste Repository*, DOE/S-0048, May 1986, linked [here](#).

⁵ See *Recommendation by the Secretary of Energy Regarding Suitability of the Yucca Mountain Site Under the Nuclear Waste Policy Act of 1982*, February 2002, linked [here](#).

⁶ Under the NWPA, Nevada submitted a notice of disapproval. Congress overrode the objection, and Congress enacted Public Law 107-200, which approved Yucca Mountain as the site for the repository.

⁷ See GAO April 8, 2011, *op cit.* at page 11 and Energy and Commerce Committee’s June 1, 2011 Subcommittee on Environment and the Economy hearing linked [here](#).

⁸ See Blue Ribbon Commission *Report to the Secretary* [here](#) and the February 1, 2012 Subcommittee on Environment and the Economy hearing on the Report linked [here](#).

the BRC's recommendations and a framework for meeting the government's obligation to dispose of nuclear waste.⁹ DOE agreed with the BRC that a consent-based siting process would be critical to the successful implementation of the agency's waste management strategy. On January 12, 2017, DOE released a document outlining a draft consent-based siting process for disposal and storage of nuclear waste.¹⁰

In the meantime, following the administration's attempt to withdraw the license application, the States of Washington and South Carolina, in addition to private parties, sued the Federal Government to resume NRC's review of the license. On August 13, 2013, the D.C. Court of Appeals ruled in favor of the petitioners and issued a writ of mandamus forcing NRC to continue the licensing process for Yucca Mountain.¹¹ As a result, the NRC resumed consideration of the scientific and technical review of the DOE's license application and in 2015, found that DOE's license application met applicable regulatory requirements, including post-closure requirements that the repository could be reasonably expected to safely protect public health for one million years.¹² However, the NRC staff withheld the recommendation to issue the construction authorization license due to issues relating to the ownership and control of the land and water access where the repository would be located. In any case, prior to the Commission making a final decision on the Yucca Mountain license application, DOE and NRC would have to resolve approximately 300 contentions filed by affected parties associated with the project. DOE has taken no action to resume the licensing process, and Congress has not supplied the funding to do so.

In November 2013, the D.C. Court of Appeals also ruled in favor of state utility regulators and held that the Nuclear Waste Fund fee may not be collected from electricity ratepayers due to the Federal Government's lack of a nuclear waste management plan due to DOE's closure of the Yucca Mountain Project.¹³ The approximately \$750 million annual collection was suspended by DOE in May 2014. As of September 30, 2023, the NWF maintained a balance of \$48 billion.¹⁴

Given the failure of DOE to fulfill its contractual obligations to begin disposing of SNF in 1998, nuclear utilities began filing lawsuits to recover additional storage costs they would not have incurred had DOE begun accepting waste as scheduled. Court decision held that compensation would come from the U.S. Treasury's Judgement Fund, a permanent account that is used to cover damage claims against the Government. These taxpayer payments do not require

⁹ U.S. Department of Energy, [Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste](#) (Jan. 2013)

¹⁰ U.S. DOE, [Draft Consent-Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Radioactive Waste](#) (Jan. 12, 2017). This became the basis for current DOE work on consent-based siting.

¹¹ *In re Aiken Cnty.*, 725 F.3d 255 (D.C. Cir. 2013) linked [here](#).

¹² See, Safety Evaluation Report published in January 2015, linked [here](#). See, also, Nuclear Regulatory Commission, "Safety Evaluation Report Related to Disposal of High-Level Radioactive Wastes in a Geologic Repository at Yucca Mountain, Nevada: Repository Safety after Permanent Closure. NUREG-1949, Volume 3." October 2014.

¹³ *Nat'l Ass'n of Regulatory Util. Comm'rs v. United States DOE*, 736 F.3d 517 (D.C. Cir. 2013) linked [here](#).

¹⁴ Department of Energy, FY 2023: NWF Annual Financial Report Summary, December 14, 2023, linked [here](#).

appropriations.¹⁵ With \$10.6 billion already paid out, DOE estimates its potential future liabilities for delays in taking SNF could total as much \$41 billion in additional expenditures.¹⁶

Against this backdrop, the Committee on Energy and Commerce conducted extensive oversight and convened a series of hearings¹⁷ to examine issues to support the development of comprehensive NWPAs reforms. These reforms sought to address issues such as long-term project funding, DOE program management, licensing, site preparation, stakeholder engagement, and other matters necessary to ensure program to manage SNF and high level waste would operate effectively, going forward, to meet statutory requirements.¹⁸ The work culminated in the strong, bi-partisan House passage of the Nuclear Waste Policy Amendments Act of 2018 ([H.R. 3053](#)) in May 2018 by a vote of [340-72](#). Subsequently, the measure did not move out of the Senate. Related measures in the 116th Congress were not enacted either. At the same time, while the Trump administration proposed funding to restart licensing in its FY 2018 through FY 2020 budget requests, Congress did not approve the requests and the administration did not make a request in its FY 2021 budget.¹⁹ The Biden administration has not made requests to restart the licensing of the repository and has focused instead on pursuing a consent-based siting program, under existing authorities.²⁰

Finally, current, positive prospects for expansion of nuclear technologies raise additional considerations relating to management and economics of spent nuclear fuel. This includes impacts on the SNF inventory and regulatory and contractual requirements for managing the fuels under the NWPAs. In addition, innovations in reactor technologies may enable economical use of more of the “energy” in nuclear fuels, including SNF. Such innovations in reactor technology and fuel forms also present opportunities for closing the nuclear fuel cycle, *i.e.*, enabling reprocessing and recycling of used fuel to fuel reactors and to reduce long-term waste inventories.²¹ Expansion of reprocessing also involves policy considerations that Congress may have to confront.²² In any event, the growth of innovative technologies will impact spent nuclear fuel management and should be a matter of Committee consideration.

IV. ISSUES

The following issues may be examined at the hearing:

- What is necessary for durable, effective implementation of the legal requirements of the Nuclear Waste Policy Act?

¹⁵ See Mark Holt, *Civilian Nuclear Waste Disposal*, Congressional Research Service, September 17, 2021 (RL33461), linked [here](#).

¹⁶ See DOE’s Fiscal Year 2023 Agency Financial Report, pages 125-126, linked [here](#).

¹⁷ See Subcommittee on Environment and the Economy hearings from [May 15, 2015](#); [September 9, 2015](#); [October 1, 2015](#); [October 28, 2015](#); [December 3, 2015](#); [April 20, 2016](#); and [July 7, 2016](#).

¹⁸ Background on this work is linked [here](#).

¹⁹ See Mark Holt, [op cit](#).

²⁰ See DOE Awards \$26 Million to Support Consent-Based Siting for Spent Nuclear Fuel, linked [here](#).

²¹ DOE FY 2025 Budget Justification describes some of the research and development work on fuel cycle technologies related to this topic, linked [here](#).

²² See, for example, BRC report, *op. cit.*, and *Merits and Viability of Different Nuclear Fuel Cycles and Technology Options and the Waste Aspects of Advanced Nuclear Reactors*, National Academies of Sciences, Engineering, and Medicine, 2023, linked [here](#).

- What is necessary to protect the interests of ratepayers and the American taxpayer?
- What do the prospects of expanding nuclear deployment mean for spent nuclear fuel management and disposal?
- How do innovations and advancements in nuclear technology affect the disposition of spent nuclear fuel?

V. STAFF CONTACTS

If you have any questions regarding this hearing, please contact Peter Spencer, Elise Krekorian, or Mary Martin of the Committee staff at (202) 225-3641.