Congressional Budget Office

Testimony

The Federal Government's Responsibilities and Liabilities Under the Nuclear Waste Policy Act

Kim Cawley
Chief, Natural and Physical Resources
Cost Estimates Unit

Before the
Subcommittee on Environment and the Economy
Committee on Energy and Commerce
U.S. House of Representatives

December 3, 2015

This document is embargoed until it is delivered at 10:00 a.m. (EST) on Thursday, December 3, 2015. The contents may not be published, transmitted, or otherwise communicated by any print, broadcast, or electronic media before that time.

Chairman Shimkus, Ranking Member Tonko, and Members of the Committee, I am pleased to provide updated information about the federal government's responsibilities and liabilities under the Nuclear Waste Policy Act of 1982 (NWPA) and the status and budgetary treatment of the Nuclear Waste Fund. Since CBO last testified on this topic five years ago, there have been a number of important developments.[1] I would like to highlight the following:

- Since 2010, the Administration has taken a variety of actions to terminate a project to build a geologic repository for nuclear waste at Yucca Mountain in Nevada—the only site where such waste is authorized to be stored under current law. Although agencies have continued activities related to licensing that facility, the Congress has since provided no new funding to the Department of Energy (DOE) to build it.

- Largely in response to such actions, the National Association of Regulatory Utility Commissioners and the Nuclear Energy Institute filed petitions with the U.S. Court of Appeals for the District of Columbia Circuit to end the federal government's collection of fees paid by nuclear power generators to cover the cost of disposing of civilian nuclear waste.

- In November 2013, that court effectively ordered DOE to suspend collection of annual fees from nuclear power generators. The court found that in DOE's most recent assessment of the adequacy of the fees to cover the lifetime costs of disposal, the department had failed to provide a legally justifiable basis for continuing to collect fees in the absence of an identifiable strategy for waste management. In May 2014, pursuant to the court's order, DOE stopped collecting disposal fees, which had previously totaled roughly $750 million per year.

- DOE is more than 17 years behind schedule in its contractual obligations to remove and dispose of civilian nuclear waste, and it has already incurred significant liabilities for damages related to its partial breach of contracts with electric utilities.[2] The federal government has already paid $5.3 billion in damages to electric utilities, and DOE estimates that its remaining liabilities will total $23.7 billion if legislation and sufficient appropriations are enacted that will enable it to begin to accept waste within the next 10 years. However, if the department's schedule is further delayed, the anticipated costs—which will be borne by taxpayers through spending from the Department of the Treasury's Judgment Fund—will climb.

- DOE is not currently receiving any appropriations to construct facilities for the geologic disposal of nuclear waste. But disposing of civilian nuclear waste will cost a substantial amount over many decades regardless of how the government meets that responsibility. Providing annual appropriations for disposal-related activities in the future would intensify competition for such funding, which, through fiscal year 2021, is subject to caps specified in the Budget Control Act of 2011 as amended by subsequent legislation.

- Because the federal budget records most income on a cash basis, the fees that utilities have already paid have been credited as offsets to federal spending in the years in which they were collected and thus helped to reduce deficits in those years. As a result, although such fees were authorized to be used for nuclear waste disposal, the unexpended balances of those fees cannot offset future appropriations for such activities in estimates of the budgetary effects of those appropriations.

- The amount of nuclear waste that has been generated already exceeds the statutory limit on the volume of waste that can be disposed of in the repository currently authorized by the Nuclear Waste Policy Act. Even if a repository is built at Yucca Mountain, a change in law will ultimately be required to authorize DOE to permanently dispose of all of the waste anticipated to be generated by existing nuclear power plants. Without such a change and without steps that will allow DOE to fulfill its contractual responsibilities to dispose of waste, taxpayers will continue to pay utilities—through settlements and claims awards—to keep storing substantial amounts of waste.

1. See statement for the record by Kim Cawley, Chief, Natural and Physical Resources Cost Estimates Unit, Congressional Budget Office, for the House Committee on the Budget, *The Federal Government's Responsibilities and Liabilities Under the Nuclear Waste Policy Act* (July 27, 2010), www.cbo.gov/publication/21691.

2. DOE's failure to accept waste in accordance with a contractually specified schedule is considered a partial, rather than full, breach of contract. Although DOE remains behind schedule, it has not, at this point, fully breached its contractual obligations to permanently dispose of waste. The partial breach gives aggrieved parties a right to damages related to the delay but does not cause the contract to be cancelled.

The Federal Government's Responsibilities and Liabilities Under the Nuclear Waste Policy Act

The NWPA requires the federal government to take possession of and permanently dispose of spent nuclear fuel generated at civilian nuclear reactors and to dispose of radioactive waste resulting from federal activities in manufacturing nuclear weapons. Under current law, the only solution that the government is authorized to pursue is to permanently dispose of waste at a geologic repository, and Yucca Mountain in Nevada is the only place where such a repository may be located.

Under the NWPA, the federal government, through DOE, faces substantial costs to establish a repository for the nation's nuclear waste. It has also incurred—and partially breached—contractual obligations to remove waste from existing civilian nuclear facilities. The government will also be responsible for disposing of waste from any new facilities built in the future.

Under contracts signed with electric utilities in accordance the NWPA, DOE was scheduled to start removing waste from storage sites at individual power plants for transport to a federal storage or disposal facility by 1998. After the federal government missed its 1998 contractual deadline to start collecting waste, electric utilities began—successfully—to sue the government for resulting damages, which are paid from the Treasury's Judgment Fund.

To date, 35 lawsuits have been settled, 33 cases have been resolved by final judgments, and 19 cases are still pending.[3] Because judicial claims for damages are made retrospectively, many more cases can be expected in the coming decades as utilities seek to recover the costs they have incurred for continuing to store nuclear waste long after they expected it to be removed and sent to a permanent disposal site.

Pursuant to the details of existing settlements and judgments, utilities have so far received $5.3 billion in payments from the Judgment Fund to reimburse those costs that are due to DOE's partial breach of contracts. Such costs are unique to each nuclear power plant and depend on a number of factors, including the age and operating status of the plant as well as the size and configuration of the plant's space available for storing nuclear waste.

Estimates of federal liabilities related to DOE's partial breach of contractual obligations are uncertain and depend critically on when and how the department begins to accept waste and the number of years it takes to eliminate the backlog that will have accrued by that time. The sooner DOE begins to accept and dispose of waste, the sooner federal liabilities can be contained. As long as DOE remains behind schedule, taxpayers will continue to incur liabilities. In CBO's estimation, even if legislative changes proposed by the Administration are enacted and fully implemented and DOE begins to accept waste within the next 10 years, the department will face a backlog that would take more than 20 years to eliminate. During that time, liabilities will continue to accrue.

DOE currently estimates that if certain legislative changes and sufficient appropriations were enacted in the near future, the department could begin to accept waste within the next 10 years, and liabilities (including the $5.3 billion that has already been paid) would ultimately total $29 billion (in 2015 dollars).[4] It is not yet clear how the Administration's decision to terminate the Yucca Mountain repository will affect the federal government's liabilities to electric utilities. If DOE is found at some point to have fully breached its contractual commitments or if acceptance of the waste is further delayed, those liabilities could increase considerably.

According to the nuclear industry, civilian nuclear reactors have already produced more than 74,000 metric tons of nuclear waste—an amount that exceeds the limit specified in the NWPA on the amount of waste authorized to be disposed of in the repository. Ultimately, a change in law would be required to authorize DOE to permanently dispose of all of the waste anticipated to be generated by existing nuclear facilities, regardless of whether a repository is built at Yucca Mountain. Even if such legislation is enacted, federal liabilities will remain substantial, and the federal government will continue to make payments from the Judgment Fund to utilities for many years.

Financing the Costs of Disposing of Nuclear Waste

The NWPA addressed how the disposal of spent nuclear fuel and defense-related waste was to be paid for. Under that act, the costs are to be borne by the parties that

3. Department of Energy, *Fiscal Year 2015 Agency Financial Report*, DOE/CF-0144 (November 2015), http://go.usa.gov/cjftY (5.31 MB).

4. Ibid.

generate nuclear waste. The law authorizes DOE to levy fees on the nuclear power industry to cover the costs for the waste it generates. The law also authorizes appropriations from the Treasury's general fund to pay for disposing of high-level radioactive waste generated by the nation's defense programs.

In 2008, DOE published an estimate of the costs—including those for transportation and project management—associated with geological disposal of civilian and defense-related nuclear waste. At that time, Yucca Mountain was assumed to be the primary repository. In DOE's estimation, the project would cost about $96 billion in 2007 dollars over a period of more than 100 years.[5] DOE has not published an updated estimate of the cost of completing a geologic repository for the nation's nuclear waste since then.

Financing the Costs Associated With Civilian Nuclear Waste

The NWPA established the Nuclear Waste Fund, an accounting mechanism in the federal budget that records cash flows associated with the civilian nuclear waste program. Such cash flows include fees paid by electric utilities and expenditures of amounts appropriated from the fund for programmatic purposes. In addition, because the NWPA authorizes the Secretary of the Treasury to invest the fund's unspent balances in nonmarketable Treasury securities, interest earnings attributable to such investments also accrue to the fund. Interest earnings are intragovernmental transfers and do not create net receipts to the federal government; however, such amounts add to the resources that the NWPA authorizes to be appropriated for the civilian waste disposal program.

Starting in 1983, the NWPA authorized DOE to charge electric utilities annual fees at a rate of 1 mil (0.1 cent) per kilowatt-hour of the electricity they sell that is generated by nuclear power plants. The act also required DOE to periodically review and, if necessary, adjust those fees to ensure that the Nuclear Waste Fund has sufficient resources (including interest) to pay for disposing of utilities' waste. The department did not adjust the 1 mil fee until 2014, when it did so in response to litigation that focused largely on DOE's January 2013 assessment of the adequacy of the fees to cover the costs of disposal. Specifically, in November 2013, the U.S. Court of Appeals for the District of Columbia Circuit ordered DOE to reduce the 1 mil fee to zero, ruling that the department had failed to justify collection of the fee in the absence of an identifiable strategy for waste management. In May 2014, DOE finalized that adjustment and effectively stopped collecting the disposal fees, which had previously totaled about $750 million annually.

In addition to the annual fees, the NWPA established onetime fees to cover the costs of disposing of waste that was generated before the law was enacted. DOE provided utilities with several options for paying that onetime charge, but several utilities have not yet paid the fee, and a significant amount remains uncollected. Receipts from the onetime fees that remain unpaid and that will become due once DOE begins to remove waste currently amount to about $3.1 billion, DOE estimates.[6] Interest accrues on the balances due from those onetime fees until the utilities pay them to the government; therefore, when the fees are paid, the amounts deposited will probably be significantly greater than the current balances due.

From 1983 through the end of fiscal year 2015, a total of $41.9 billion was credited to the Nuclear Waste Fund (see Table 1). That amount includes $21.6 billion in fees paid by the nuclear industry as well as $20.3 billion from intragovernmental transfers of interest credited to the fund. The authority to spend amounts in the fund comes from annual appropriation acts. Cumulative expenditures from the fund during that period totaled about $7.6 billion, mostly for analyses related to the waste disposal program and for DOE's initial design work on the Yucca Mountain facility. Since 2010, no appropriations have been provided for DOE's waste disposal program or the Yucca Mountain project, and less than $40 million has been provided to the Nuclear Regulatory Commission (NRC) and other federal entities for ongoing activities related to nuclear waste disposal. DOE stopped collecting annual fees in May 2014, but intragovernmental transfers of interest continue to add significantly to the fund's balance. In 2015, interest credited to the fund totaled $1.4 billion, bringing the fund's unspent balance to $34.3 billion. CBO estimates that in 2016, less than $50 million will be disbursed from the fund and $1.5 billion in interest will be credited, bringing the fund's end-of-year balance to $35.8 billion.

5. Department of Energy, Office of Civilian Radioactive Waste Management, *Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program, Fiscal Year 2007,* DOE/RW-0591 (July 2008), http://go.usa.gov/cjmtG.

6. Data supplied to the Congressional Budget Office in July 2010 by the Department of Energy.

Table 1.

Historical Cash Flows Related to Nuclear Waste Disposal

Billions of Dollars

	Cumulative Totals, 1983 to 2014	Actual, 2015
Nuclear Waste Fund		
Deposits		
Annual fees	20.0	0
One-time fees	1.6	0
Subtotal	21.6	0
Interest credited[a]	18.9	1.4
Total	40.5	1.4
Disbursements	-7.6	*
Balance	**32.9**	**34.3**
Memorandum:		
Spending From General Fund		
Outlays for defense-related activities	3.7	*
Outlays from Judgment Fund for contractual liabilities	4.5	0.8

Source: Department of Energy.

Notes: Amounts are in nominal dollars.

* = less than $50 million

a. Intragovernmental transfers from general revenues.

Financing the Costs Associated With Defense-Related Nuclear Waste

In addition to the amounts appropriated from the fees and interest credited to the Nuclear Waste Fund, the Congress has provided annual appropriations to the nuclear waste program to cover the costs that DOE estimates are related to the disposal of nuclear waste generated by federal defense programs. In 2008, DOE determined that about one-fifth of the total life-cycle costs of the waste disposal program were attributable to that endeavor and that the share of the program's total costs related to defense activities should be paid for with appropriations from the general fund of the Treasury (rather than from the Nuclear Waste Fund).[7] Between 1993 and 2010, the Congress provided about $3.8 billion from the general fund for such costs. Lawmakers have not provided any new funding for the disposal of defense-related waste since 2010, when the Administration began taking steps to halt the Yucca Mountain project.

7. Department of Energy, Office of Civilian Radioactive Waste Management, *Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program, Fiscal Year 2007,* DOE/RW-0591 (July 2008), http://go.usa.gov/cjmtG.

The Budgetary Impact of Activities Related to Nuclear Waste Management

On the basis of underlying statutory provisions of the Nuclear Waste Policy Act, federal cash flows related to the nuclear waste program involve a combination of discretionary spending and mandatory spending. In CBO's baseline projections and legislative cost estimates, budgetary effects in those two categories are subject to different Congressional budget enforcement rules.

The Nuclear Waste Fund is an accounting mechanism that records cash flows associated with the civilian nuclear waste program. Under the NWPA, spending from the fund is not automatically triggered by the collection of fees or transfers of interest earnings but is instead controlled by annual appropriation acts; it is therefore considered discretionary spending. Funding related to the disposal of defense-related nuclear waste is also subject to annual appropriations.

In some cases, discretionary annual appropriations for certain activities may be at least partially offset by related fees. For example, annual appropriation acts that provide

funding for the NRC are credited with fees that the agency collects from regulated entities. In that particular case, the fees collected in any given year are formulaically based on the amount of funding provided; in that sense, the appropriation of funds to the agency effectively triggers the collection of resulting fees, which are therefore considered discretionary and help to offset the agency's gross appropriation.

Nuclear waste fees paid by electric utilities do not, however, offset annual discretionary appropriations; rather, they are credited against mandatory spending, which includes cash flows that are not subject to annual appropriation acts. Such fees are governed by statutory provisions of the NWPA and the terms of contracts with utilities that DOE entered into pursuant to that act. Likewise, ongoing spending for DOE's liabilities stemming from its partial breach of those contracts is classified as mandatory spending because the source of such spending—the Treasury's Judgment Fund—is governed by underlying law that provides permanent, indefinite budget authority for such payments.

Historical Net Budgetary Impact of the Nuclear Waste Fund and Related Activities

The federal budget operates largely on a cash basis—that is, receipts and expenditures are recorded in the year when they occur. In almost every year since the Nuclear Waste Fund was established, fees paid by electric utilities and credited to the fund have exceeded spending; in other words, in most years the net receipts credited to the fund helped to reduce the federal deficit. Since 1983, such net reductions have totaled $14 billion—the cumulative difference between $21.6 billion in fees and $7.6 billion in spending from the fund. (Interest credited to the Nuclear Waste Fund represents intragovernmental transfers; such transactions do not create receipts to the government or directly affect the federal deficit, but they do increase the resources authorized to be used for the nuclear waste program.)

In addition to the $14 billion in cumulative budget savings associated with the Nuclear Waste Fund over the 1983–2015 period, the budget has recorded some spending from the general fund—in particular, a total of $9 billion in outlays for activities related to disposal of defense-related waste ($3.7 billion) and for claims paid from the Judgment Fund ($5.3 billion). Thus, taken as a whole, cash flows related to nuclear waste management since 1983 have, on net, reduced federal deficits by $5 billion. CBO expects, however, that over the next 10 years, ongoing spending from the Judgment Fund for DOE's contractual liabilities will roughly equal that amount.

Projections of Receipts and Spending Related to the Nuclear Waste Fund

CBO's baseline projections of nuclear waste fees reflect uncertainty about events that could transpire under current law. Utilities are not paying annual fees, and it is widely assumed that they are unlikely to resume paying fees in the absence of clear steps taken toward enabling DOE to begin to accept and dispose of waste. However, notwithstanding the court ruling that required DOE to reduce annual fees to zero, the NWPA provides a mechanism for DOE to reinstate the fees if it can demonstrate—through a new assessment of the adequacy of such fees—that additional collections are warranted to cover the costs of implementing a legally justifiable waste management strategy. Given that possibility—that the Administration could pursue actions, under current law, to reinstate annual fees—CBO's baseline follows the agency's usual practices for projecting spending and receipts related to activities involving uncertain administrative actions. Specifically, CBO estimates the total amounts that would be collected if fees were fully reinstated and includes 50 percent of those amounts in its baseline. Thus, CBO's baseline includes $385 million annually in nuclear waste fees—roughly half the amount that had been collected before utilities ceased payments. The Administration follows similar procedures in preparing baseline projections of nuclear waste fees.[8]

Under current law, no spending is occurring for permanent geologic disposal as authorized under the NWPA. However, CBO's projections of mandatory spending include significant amounts of spending for continued on-site storage of waste at civilian nuclear facilities—in the form of payments from the Judgment Fund related to DOE's contractual liabilities. Because of the timing lag between when such liabilities are incurred and damages are eventually paid, CBO expects that most of the anticipated nuclear waste-related spending from the Judgment Fund over the next 10 years—which CBO estimates will total about $5 billion—is attributable to liabilities that DOE has either already incurred or cannot avoid. As a result, CBO expects that it would be very difficult for

8. See Office of Management and Budget, *Budget of the U.S. Government, Fiscal Year 2016: Appendix* (February 2015), p. 417, www.whitehouse.gov/omb/budget/Appendix.

either the Administration or the Congress to curtail such spending during that period. Programmatic changes or appropriations for DOE to pursue a waste management strategy consistent with the NWPA could constrain the government's liabilities in subsequent years, but without such actions, spending from the Judgment Fund—through which taxpayers effectively pay utilities for on-site storage of nuclear waste—will probably exceed DOE's current $29 billion estimate of the government's aggregate liability and result in continued substantial outlays over many decades.

Long-Term Budget Outlook for Activities Related to Nuclear Waste

The federal government remains responsible for permanently disposing of spent nuclear fuel, a task that will require a significant amount of federal spending over many decades regardless of what actions DOE and the Congress take. The NWPA specified that the parties that generate nuclear waste must bear the costs of disposing of it, but the primary mechanism for financing such costs—the annual fee—is not currently in effect. The opportunity to collect fees for waste generated by existing nuclear power plants will end when they reach the end of their NRC license extension (or the end of their economically useful life) and cease operations—probably in the 2030s and 2040s.

The amount of existing waste already exceeds the amount authorized to be disposed of at the repository currently authorized under the NWPA. The existing nuclear power plants will continue to generate waste, and DOE remains contractually obligated to dispose of such waste. Ultimately, a change in law will be required to authorize DOE to permanently dispose of all of the waste anticipated to be generated by existing nuclear power plants, even if a repository is built at Yucca Mountain. Implementing a permanent storage solution involving federal facilities will require significant increases in funding, and although existing balances of fees in the Nuclear Waste Fund are authorized for such purposes, those fees have already reduced deficits in previous years, and in estimates of the budgetary effects of future legislation, they cannot offset new spending authority that might be enacted. Because no funding is currently being provided, appropriating funds for such activities in the future would intensify competition for annual appropriations, which, through fiscal year 2021, are subject to caps specified in the Budget Control Act of 2011 as amended by subsequent legislation. Meanwhile, in the absence of progress toward allowing DOE to fulfill its contractual obligations, taxpayers will continue to pay utilities—through settlements and claims awards—to store substantial amounts of waste.

This testimony was prepared by Megan Carroll and Kim Cawley with guidance from Theresa Gullo. In keeping with CBO's mandate to provide objective, impartial analysis, this testimony contains no recommendations. Jeffrey Kling and Robert Sunshine reviewed the testimony, Bo Peery edited it, and Jeanine Rees prepared it for publication. An electronic version is available on CBO's website (www.cbo.gov/publication/51035).