

CBO TESTIMONY

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

before the
Committee on the Budget
U.S. House of Representatives

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CONGRESSIONAL BUDGET OFFICE
SECOND AND D STREETS, S.W.

Mr. Chairman, Congressman Ryan, and Members of the Committee, I am pleased to appear before you today to discuss issues related to the federal government's liability under the Nuclear Waste Policy Act of 1982 (NWPA).

My testimony today makes the following points:

- By law, the federal government is responsible for permanently disposing of spent nuclear fuel generated by civilian facilities, which pay fees for that waste disposal service. Regardless of how the government meets that responsibility, discharging those liabilities will require significant federal spending over many decades.
- The Nuclear Waste Policy Act authorized a system to manage radioactive waste, including an underground repository to permanently dispose of spent nuclear fuel from civilian facilities. Currently, the federal government is 10 years behind schedule in its contractual obligations to remove and dispose of such waste; by the time the repository might be opened, it is likely to face at least a 20-year waste backlog.
- In the absence of a federal underground repository to accept nuclear waste for storage, taxpayers are now starting to pay—in the form of legal settlements with utilities—for a decentralized waste storage system at sites around the country. (Those payments are being made from the Department of the Treasury's Judgment Fund.) The Department of Energy (DOE) currently estimates that payments to utilities pursuant to such settlements will total at least \$7 billion, and possibly much more if the program's schedule continues to slip. Regardless of whether or when the government opens the planned repository, those payments are likely to continue for several decades.
- Ultimately, the repository that is now authorized under NWPA will not provide sufficient capacity to store all of the waste for which the federal government is responsible. The statutory cap on the amount of waste that can be stored there is significantly lower than the volume of waste that DOE expects will be generated during the lifetimes of existing nuclear facilities, let alone the additional volume from any new facilities that may be built. Without a change in law to allow construction of disposal facilities with sufficient capacity to accommodate all of the waste that will be generated, taxpayers will need to pay utilities to dispose of a substantial amount of additional waste in the future.
- Contractual liabilities associated with nuclear waste from civilian power plants are one component of the government's broader liabilities for remedying environmental contamination, much of which results from operating the nation's nuclear weapons complex.

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

The Nuclear Waste Policy Act gave the federal government statutory responsibility for permanently disposing of spent nuclear fuel generated at civilian nuclear reactors and for disposing of radioactive waste generated as a result of federal activities related to the manufacturing of nuclear weapons. Under the law, the federal government, through the Department of Energy, faces substantial costs to establish a federal repository for the nation's nuclear waste. It has also incurred contractual obligations to remove waste from civilian nuclear facilities.

Under NWPA, the federal government will have to spend tens of billions of dollars over many decades to fulfill its obligations to dispose of waste from the current generation of civilian nuclear reactors. The government will also be responsible for waste from any new facilities that may be brought online in the future. However, the waste from those new facilities cannot be accommodated in the repository envisioned under NWPA because of statutory constraints on the amount of waste the repository can store.

The Federal Repository Authorized for Yucca Mountain

The Nuclear Waste Policy Act authorized DOE to build a geologic repository to permanently store up to 70,000 metric tons of spent nuclear fuel generated by civilian nuclear power plants and high-level radioactive waste generated by federal facilities. Under current law, Yucca Mountain in Nevada is the only place where such a repository may be located. To proceed with construction and operation of the facility, DOE must apply for and receive a license from the Nuclear Regulatory Commission (NRC). DOE expects to submit that application for authority to begin constructing the repository in 2008. (To date, many of DOE's activities have focused on analyses required to support the license application.) If the NRC approves the application within three years and if other key regulatory requirements are subsequently met, DOE expects the planned repository at Yucca Mountain to begin accepting waste in 2017, although the department has recently indicated that this planned schedule could slip further.¹

The law also addressed how the disposal of spent nuclear fuel and defense-related waste was to be paid for. Under NWPA, the costs for disposing of the waste are to be borne by the parties that generate it, and the law authorizes DOE to levy fees on the nuclear power industry to cover those costs. The law also authorizes

1. Statement of Edward F. Sproat III, Director, Office of Civilian Radioactive Waste Management, Department of Energy, before the Subcommittee on Energy and Water Development of the House Committee on Appropriations, March 28, 2007.

Table 1.

Federal Cash Flows to and from the Nuclear Waste Fund

(Billions of nominal dollars)

	Cumulative Totals, 1983 Through 2006	CBO Estimate, 2007
Deposits		
Annual fees	13.3	0.8
One-time fees	1.5	0
Subtotal, fees	14.8	0.8
Interest credited ^a	10.9	0.8
Total, Deposits	25.7	1.6
Disbursements	6.7	0.2
Balance	19.0	20.4 ^b
Memorandum:		
Appropriations for Defense-Related Activities		
Budget authority	3.1	0.3

Sources: Congressional Budget Office; Department of Energy.

- a. Intragovernmental transfers from general revenues.
 - b. Cumulative fund balance.
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appropriations from the Treasury's general fund to pay for disposing of high-level radioactive waste generated by the nation's defense programs.

The cash flows since 1983 for major components of the nuclear waste disposal program (summarized in Table 1) are described in the following sections.

Financing the Cost of Disposing of Civilian Nuclear Waste

Starting in 1983, NWPAA authorized DOE to charge electric utilities fees to cover the cost of disposing of the nuclear waste they generate. Utilities today pay annual fees at a rate of 1 mil (0.1 cent) per kilowatt-hour of electricity generated and sold by nuclear power plants. The fees, which are recorded in the budget as mandatory offsetting receipts (a credit against direct spending), are deposited into the Nuclear Waste Fund, or NWF (a special fund in the Treasury that records cash flows associated with the civilian nuclear waste program). Amounts in that fund are available for spending only to the extent provided in annual appropriation acts. Under NWPAA, DOE is required to periodically review and, if necessary, adjust those fees to ensure that the fund has sufficient resources to pay for disposing of the utility industry's nuclear waste. DOE has not increased that annual charge since 1983.

In addition to the ongoing yearly fees, NWPAA established one-time fees to cover the cost of disposing of waste that was generated before the law was enacted. DOE

provided utilities with several options for paying that one-time charge, but several utilities have not yet paid the fee, and a significant amount remains uncollected.

The Nuclear Waste Policy Act authorized appropriations from the Nuclear Waste Fund to cover the costs of the civilian nuclear waste program and also permitted DOE to borrow from the Treasury (subject to approval in appropriation acts) if balances in the fund were insufficient to cover the program's immediate costs. (The law stipulates that amounts borrowed from the Treasury must be repaid from future fee collections.) In addition, the law authorized the Secretary of the Treasury to invest the fund's unspent balances in nonmarketable Treasury securities, which are credited with interest.

As shown in Table 1, \$25.7 billion has been credited to the NWF from its inception in 1983 through the end of fiscal year 2006. That amount includes fees paid by the nuclear industry totaling \$14.8 billion as well as \$10.9 billion from intragovernmental transfers of interest earnings. Cumulative expenditures from the fund during that period totaled about \$6.7 billion, mostly for analyses related to the waste disposal program and for appropriations to DOE for initial design work on the Yucca Mountain facility. The NRC and other federal entities also received modest appropriations from the fund for work related to the program, leaving an unspent balance of about \$19.0 billion at the end of 2006. The Congressional Budget Office (CBO) estimates that in 2007, another \$1.6 billion was credited to the fund—half of which came from fees and half from interest. Expenditures in 2007 totaled \$0.2 billion, bringing the fund's current balance to \$20.4 billion, in CBO's estimation.

If all of today's 104 licensed nuclear reactors continue to generate electricity, future annual receipts from industry fees are likely to average between \$750 million and \$800 million. Most U.S. nuclear power plants began operating in the mid-1970s or during the 1980s under 40-year licenses. The NRC has approved 20-year extensions to the licenses of nearly half of the plants in operation today, and it anticipates that many of the others will apply for such licenses. When those plants reach the end of their license extensions (or their economically useful lives) and cease operations—probably in the 2030s and 2040s—they will pay no additional fees to the Nuclear Waste Fund to cover long-term costs related to their waste.

Receipts from the one-time fees that remain unpaid and become due once the federal repository is opened currently amount to about \$3 billion, DOE estimates.² Interest accrues on the balances due from those one-time fees until the utilities pay them to the government. Also accruing and adding significantly to the fund's balances are credits of interest on the fund's unspent dollars. Those amounts are intragovernmental transfers and do not create net receipts to the federal govern-

2. Data supplied to the Congressional Budget Office in September 2007 by the Department of Energy's Office of Civilian Radioactive Waste Management.

ment. However, they do add to the resources that are authorized to be used for the waste disposal program.

Financing the Costs Associated with Defense-Related Nuclear Waste

In addition to the amounts appropriated from the fees and interest credited to the NWF, the Congress has made 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 2001, DOE determined that just over one-fourth of the total costs of the waste disposal program are attributable to the disposal of defense-related nuclear waste and that this share of the program's total costs should be paid for with appropriations from the general fund of the Treasury.³ Since 1993, the Congress has provided nearly \$3.4 billion from the general fund for such costs.

Estimates of Total Life-Cycle Costs

In 2001, DOE published an estimate of the total costs—including transportation and project management—associated with the planned underground nuclear waste disposal facility. In DOE's estimation, the project would cost \$57.5 billion in 2000 dollars (with an associated range of accuracy of plus or minus 40 percent) over an operating period of more than 100 years.⁴ DOE estimated that nearly three-fourths of the facility's total life-cycle costs would be attributable to waste generated by civilian facilities; the remaining portion would be attributable to defense-related waste.

DOE also published a study in 2001 reporting on whether the annual fee charged for nuclear waste disposal would generate enough money in the Nuclear Waste Fund—including the interest anticipated on unspent fees—to pay for the estimated life-cycle costs associated with disposing of civilian waste.⁵ In that study, key findings of which are summarized in Figure 1, DOE estimated that fees paid by commercial nuclear power plants would cover 44 percent of the program's total costs, and interest credited to unspent NWF balances of fees would cover 27 percent. DOE assumed that appropriations for costs attributable to defense-related waste would cover the remaining 29 percent of total costs.

Using its 2001 program design as a reference case, DOE determined that the annual fee (plus accrued interest) was likely to generate sufficient balances to cover the estimated costs of civilian waste disposal. The agency reaffirmed that

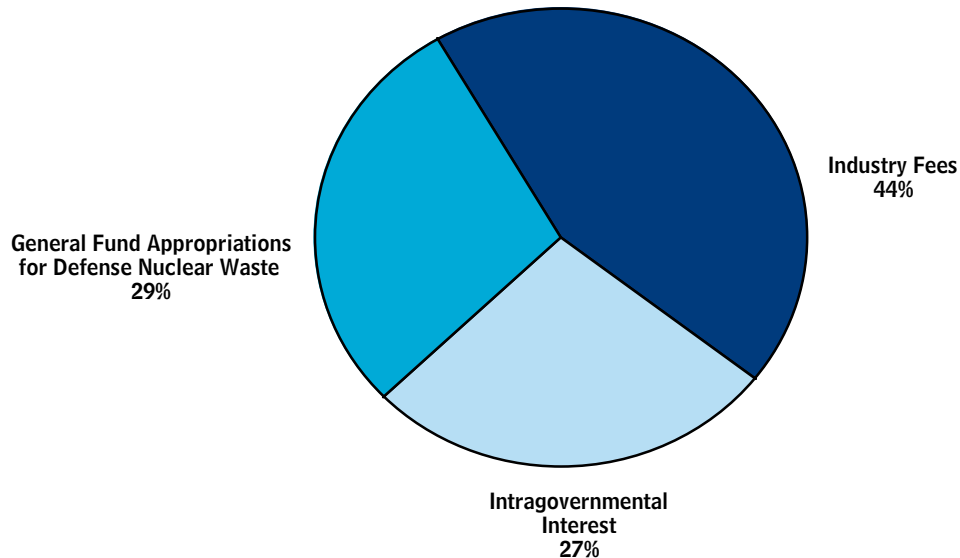
3. Department of Energy, Office of Civilian Radioactive Waste Management, *Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program*, DOE/RW-0533 (May 2001).

4. Ibid.

5. Department of Energy, Office of Civilian Radioactive Waste Management, *Nuclear Waste Fund Fee Adequacy: An Assessment*, DOE-RW-0534 (May 2001).

Figure 1.

Projected Sources of Funds for Total Life-Cycle Costs of the Nuclear Waste Disposal Program



Source: Department of Energy.

Note: Costs were calculated as 2000 dollars.

determination in 2002 but has not completed an updated study of fee adequacy since that time.⁶

Judgments about whether the fee is adequate are highly sensitive to estimates of certain key variables, such as project costs and inflation. Determinations of adequacy are also sensitive to estimates of the interest credited to the fund—estimates that are a function of interest rates and fund balances, which in turn depend on projections of appropriated spending from the fund. In CBO's view, DOE's 2001 and 2002 analyses used reasonable economic assumptions, but it is unclear whether other assumptions—particularly those related to the program's scope and costs—are still an appropriate basis for determining the adequacy of utilities' annual fees. For example, because many plants have received 20-year license extensions, the total volume of waste that those plants are expected to generate—and thus the scope of a federal program necessary to manage it—have increased significantly since 2001. An updated analysis would need to take that factor into account, as well as the impact of escalating construction costs and delays in the scheduled opening of a federal repository. The Government Accountability Office, looking back, found that many DOE construction projects involving complex technologies

6. Bechtel SAIC Company, L.L.C., *Total System Life Cycle Cost for Site Recommendation: Letter Report*, TDR-CRW-AD-000001 REV 00 (prepared for the Department of Energy, Office of Civilian Radioactive Waste Management, February 2002).

had exceeded their original estimates of costs and experienced delays in their schedules.⁷

Federal Contractual Obligations and Liabilities for Nuclear Waste

Under contracts signed with electric utilities pursuant to 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. DOE documents suggest that the planned underground nuclear waste disposal site at Yucca Mountain will not be ready to accept waste before 2017—or nearly 20 years late.⁸ Moreover, that schedule assumes that legislation, which has not been enacted, will make changes to the nuclear waste program—in particular, to simplify key regulatory procedures. Without those changes, according to DOE, the actual date that the agency begins to accept waste is likely to be even later.

After the federal government missed its 1998 contractual deadline to start collecting waste, electric utilities began—successfully—to sue the government for damages incurred as a result of the agency’s failure to meet that deadline. In seeking to resolve the initial lawsuits, DOE anticipated that it would pay court-awarded damages to individual utilities from amounts appropriated from the Nuclear Waste Fund or by issuing credits to those utilities (to reduce their future fee payments to the fund) in the amount of the damages that had been awarded.

In 2002, however, the U.S. Court of Appeals for the Eleventh Circuit held that DOE could not use the Nuclear Waste Fund to pay the damages resulting from the government’s breach of its contracts.⁹ According to the court, the costs of interim storage incurred by the utilities because of the breach were not within the uses of the fund that were permitted under NWPA. Also, the court pointed out, the department would inevitably raise future fees to compensate for any such payments—so that the injured utilities would ultimately bear the costs of the contract breach if they were paid from the fund. In addition, utilities that did not litigate their claims would end up paying larger fees to cover the cost of damage claims made by other utilities. Agreeing with the parties that brought the lawsuit, the court stated that making utilities contribute to a fund that disproportionately paid the storage costs of other utilities would raise a serious constitutional “takings” question. Following the court’s decision, the government subsequently paid damages to the utilities from the Treasury’s Judgment Fund.

7. Government Accountability Office, *Department of Energy: Major Construction Projects Need a Consistent Approach for Assessing Technology Readiness to Help Avoid Cost Increases and Delays*, GAO-07-336 (March 2007).

8. Statement of Edward F. Sproat III, March 28, 2007.

9. *Alabama Power Co. v. United States*, 307 F.3d 1300 (2002).

The Judgment Fund

The Judgment Fund is a permanent, indefinite appropriation from the Treasury that is available to pay final judgments and awards against the United States that cannot legally be paid from any other existing appropriation.¹⁰ (The fund has no fiscal year limitations, and there is no need for the Congress to appropriate money to replenish it.) The fund provides the authority for the government to pay for most court judgments and settlement agreements entered into by the Department of Justice to resolve actual or imminent lawsuits against the federal government. Generally, agencies are not required to reimburse the Judgment Fund for payments made on their behalf unless the Congress appropriates money specifically for that purpose.

Judgments Awarded and Paid to Utilities Under the Nuclear Waste Policy Act

Under the Department of Justice's settlements with electric utilities, utilities have been reimbursed for the actual costs they incurred because of DOE's partial breach of its contracts. Such costs are unique to each nuclear power plant and depend partly on the age and operating status of the plant and the size and configuration of the plant's available space for nuclear waste storage.

The Judgment Fund has paid \$290 million to four electric utilities as compensation for the costs they incurred because the federal government could not begin to accept nuclear waste for disposal in 1998. That amount includes a payment of \$35 million to the federally owned Tennessee Valley Authority. The government has appealed (or may appeal) judgments worth another \$337 million. Five additional trials for damages have been completed and are awaiting judgments, and 44 other cases have not yet been tried. Because judicial claims for damages are made retrospectively, many more cases can be expected in the coming decades as utilities seek to recover their ongoing costs for storing nuclear waste long after they expected it to be removed to a permanent disposal site.

Future Settlements Under the Nuclear Waste Policy Act

Litigation is ongoing regarding how to calculate damages for DOE's partial breach of its contractual commitments. DOE currently estimates that if the agency begins to accept waste in 2017, taxpayers' total liabilities to electric utilities will total roughly \$7 billion (in today's dollars). Further, it anticipates that payments from the Judgment Fund will span a number of decades after 2017.¹¹

10. In 2006, more than 8,000 individual payments from the Judgment Fund amounted to nearly \$0.7 billion; over the past 10 years, such payments have averaged around \$1.2 billion annually. Most of the payments are made to settle claims related to federal employment, torts, property loss, discrimination, medical malpractice, and contract disputes.

11. Statement of Edward F. Sproat III, March 28, 2007.

DOE's estimate of future damages is uncertain and is predicated on the department's views of the types of additional business and waste storage expenses that the courts will determine are appropriate and reasonable and should be paid by DOE. Those determinations will depend on such factors as the estimated rate at which DOE would have removed waste from a particular facility if the agency had been able to accept waste in 1998. If utilities successfully argue that the waste-acceptance rate used for the purpose of calculating damages should exceed the rate used in DOE's projections of liabilities, costs would probably surpass \$7 billion.

Similarly, costs may be greater if the courts take a broader view of the types of expenses for which utilities should be compensated. Although the federal government is responsible for the permanent disposal of nuclear waste, individual utilities are responsible for storing the waste until it can be delivered to a permanent storage facility. Because the site characteristics of individual utilities vary, the determination of incremental expenses incurred at particular sites must be made on a case-by-case basis and will ultimately depend on the courts' views, which could differ from DOE's.

Estimates of liabilities will increase if the schedule for completing the planned repository slips further and waste continues to accumulate at utilities' storage sites. For example, according to DOE, estimated liabilities will increase from \$7 billion to \$11 billion if the agency starts accepting waste in 2020.¹² And even then, it will face a backlog that, at best, will take more than 20 years to eliminate. As long as the agency remains behind schedule, taxpayers will continue to incur liabilities.

The Outlook for the Federal Government's Liabilities

The Nuclear Waste Policy Act sets the storage capacity of the Yucca Mountain site at no more than 70,000 metric tons. DOE estimates that roughly 65,000 metric tons of existing spent nuclear fuel and high-level defense waste are currently slated for disposal there. The nation's existing nuclear power plants generate another 2,000 metric tons of waste per year. If they continue to produce waste at that rate, the total volume will exceed Yucca Mountain's statutory capacity within a few years, well before the repository is scheduled to open.

As a result, without a change in law to expand the Yucca Mountain facility or designate another site for disposal, there will be insufficient capacity to dispose of wastes generated over the lifetimes of the nuclear power plants that are operating today. The resulting waste storage compensation payments to utilities from the Judgment Fund for waste that cannot be permanently disposed of would add significantly to federal liabilities.

Moreover, the NRC has announced that it expects to receive applications for licenses to build 32 new nuclear power plants in the next few years. If constructed,

12. Ibid.

each of those plants would produce around 20 metric tons of waste per year, or about 1,000 metric tons over a 40- to 60-year period of operations. Such plants would also pay fees to the Nuclear Waste Fund, and their waste would become a federal liability because under NWPA, nuclear plants are required to sign waste disposal agreements with DOE. Without additional storage capacity, that waste could become an additional liability of the Judgment Fund.

Accounting and Budgeting for Federal Liabilities

The federal government issues two different reports on its fiscal performance: the budget and *The Financial Report of the United States Government*. The budget largely measures cash flows in and out of the Treasury. The financial report, by contrast, primarily uses an accrual basis of accounting to measure assets, liabilities, revenues, and expenses. The principal difference between accrual and cash accounting is the timing of the recognition of transactions: An accrual system generally recognizes them when an economic event occurs rather than when the resulting cash flows take place.¹³

On the federal balance sheet, liabilities reflect obligations of the federal government that result from prior actions but that will require financial resources in the future. Regardless of whether or how particular liabilities are captured on the federal balance sheet, the budget records cash flows related to those liabilities when the flows occur.

Recording Nuclear Waste Disposal Cash Flows in the Budget

Over the 1983–2006 period, the fees paid by nuclear utilities under NWPA totaled \$14.8 billion, whereas expenditures totaled only \$6.7 billion. As a result, the nuclear waste disposal program has reduced the cumulative net deficit (and thus the need for federal borrowing) by about \$8 billion.

Because receipts to the Nuclear Waste Fund have exceeded spending, balances have grown significantly since the fund's inception, and significant amounts of interest have been credited to the fund. Intragovernmental interest is not a budgetary receipt and does not affect the size of annual deficits; however, it does add to the total amount of resources authorized to be made available for nuclear waste disposal.

Going forward, any future expenditures from the Nuclear Waste Fund in excess of annual receipts from industry fees—that is, drawing down the balances in the fund or spending the interest being credited to the fund—will increase annual deficits or reduce future surpluses. Under current budgetary procedures, all spending from the fund is considered discretionary and counts against the appropriation commit-

13. For more discussion, see Congressional Budget Office, *Comparing Budget and Accounting Measures of the Federal Government's Fiscal Condition* (December 2006).

tees' spending allocations. Income from fees, by contrast, is recorded on the mandatory side of the budget.

Environmental and Disposal Liabilities on the Federal Balance Sheet

Along with DOE's liability for the costs of disposing of civilian nuclear waste, the federal government has substantial liabilities related to the costs of mitigating hazardous and radioactive waste that the government generated (or is required, by law or regulation, to remediate). Most of those liabilities involve the contamination of soil, water, and facilities at thousands of sites, contamination that arose from operating the nation's nuclear weapons complex. Federal financial statements prepared by the Department of the Treasury indicate that over the next 75 years, the government faces more than \$300 billion in costs to clean up, dispose of, and monitor that contamination.¹⁴

14. See Department of the Treasury, Financial Management Service, *2006 Financial Report of the United States Government*, available at www.fms.treas.gov/fr/06frusg/06frusg.pdf.

