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Energy and Water Development Appropriations for Defense Nuclear Nonproliferation: In Brief

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SUMMARY

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Energy and Water Development Appropriations for Defense Nuclear Nonproliferation: In Brief

The Department of Energy's (DOE's) nonproliferation and national security programs provide technical capabilities to support U.S. efforts to reduce the threat of nuclear weapons proliferation and nuclear terrorism. These programs are administered by the National Nuclear Security Administration (NNSA), a semi-autonomous agency established within DOE in 2000. NNSA is responsible for maintaining the U.S. nuclear weapons stockpile, providing nuclear fuel to the Navy, nuclear and radiological emergency response, and nuclear nonproliferation activities.

This report gives an overview of annual appropriations for the DOE NNSA Defense Nuclear Nonproliferation (DNN) account. The National Defense Authorization Act authorizes these programs, for which funds are appropriated in the annual Energy and Water Appropriations bill. The FY2024 DOE request for DNN appropriations was $2.51 billion, an increase of .8% over the FY2023-enacted level, which was $2.49 billion. Energy and Water Development FY2023 appropriations for these programs were enacted as part of the Consolidated Appropriations Act, 2023 (P.L. 117-328, Division D).

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Budget Structure

There are two main mission areas under the DNN appropriation: the Defense Nuclear Nonproliferation Program and the Nuclear Counterterrorism and Incident Response Program (NCTIR).[1] The FY2024 DNN request is divided into the following functional areas:

- **Material Management and Minimization (M3)** conducts activities to reduce and, where possible, eliminate stockpiles of weapons-useable material around the world. Major activities include conversion of reactors that use highly enriched uranium (useable for weapons) to low enriched uranium, removal and consolidation of nuclear material stockpiles, and disposition of excess nuclear materials such as excess U.S. weapons plutonium.
- **Global Material Security (GMS)** has three major program elements: international nuclear security, radiological security, and nuclear smuggling detection and deterrence. Activities toward achieving those goals include the provision of equipment and training, workshops and exercises, and collaboration with international organizations.
- **Nonproliferation and Arms Control (NPAC)** implements programs that aim to strengthen international nuclear safeguards, control the spread of dual-use (weapons or peaceful applications) technologies and expertise, and verify nuclear reductions and compliance with treaties and agreements. This program conducts reviews of nuclear export applications and technology transfer authorizations.
- The **Bioassurance Program** aims to expand DOE's role in biodefense and develop national laboratory capabilities "to anticipate, detect, assess, and mitigate emerging biothreats." This program began in FY2023.
- **Defense Nuclear Nonproliferation Research and Development (DNN R&D)** advances U.S. capabilities to detect and characterize global nuclear security

[1] The DNN programs were reorganized starting with the FY2016 request. NCTIR was previously funded under Weapons Activities. There are three offices under the DNN appropriations: Office of DNN, Office of Counterterrorism and Counterproliferation (CTCP), and Office of Emergency Operations (EO).

threats such as foreign nuclear material and weapons production, diversion of special nuclear material, and nuclear detonations.

- The **Nonproliferation Construction** program disposes of excess U.S. weapons plutonium through a "dilute and dispose" strategy (see below).
- The **Nuclear Counterterrorism and Incident Response Program (NCTIR)** evaluates nuclear and radiological threats and develops emergency preparedness plans, including organizing scientific teams to provide rapid response to nuclear or radiological incidents or accidents worldwide.

Table 1. DOE Defense Nuclear Nonproliferation Appropriation, FY2022-FY2024

($ thousands)

	FY2022 Enacted	FY2023 Enacted	FY2024 Request
Material Management and Minimization	342,946	464,285	446,025
Global Material Security	531,441	532,763	524,048
Nonproliferation and Arms Control	184,795	230,656	212,358
NNSA Bioassurance	0	20,000	25,000
Defense Nuclear Nonproliferation R&D	729,236	767,902	728,187
Nonproliferation Construction	156,000	71,764	77,211
Nuclear Counterterrorism	370,782	469,970	493,543
Legacy Contractor Pensions	38,800	55,708	22,587
Subtotal	2,354,000	2,613,048	2,528,959
Use of Prior Year Balances	0	-123,048	-20,000
Rescission of Prior Year Balances	-282,133		
Total	2,354,000	2,490,000	2,508,959

Source: Department of Energy Congressional Budget Requests, Volume 1.

FY2024 Request

The FY2024 request for DNN appropriations was $2.51 billion, an increase of 0.8% over the FY2023-enacted level. The DOE congressional budget request attributes this change mainly to increases for the Nuclear Counterterrorism program. The increase is to improve the Nuclear Incident Response (NIR)/Nuclear Emergency Support Team's (NEST's) "capacity for emergency response and interagency partner technical training" and for National Technical Nuclear Forensics (NTNF), to "bridge a long-standing gap between research and development activities geared toward technology transition and operational capabilities."

The FY2024 budget request also includes funding in the three GMS subprograms to support nuclear material security and counter smuggling activities in Ukraine, and to "be employed to

assist Ukrainian partners to rebuild and strengthen critical nuclear and radiological security infrastructure when conditions allow."

FY2023 Appropriations

The FY2023 request for DNN appropriations totaled $2.346 billion, reflecting a 13.2% increase over the FY2022-enacted levels. The FY2023 budget proposal requested a $37.2 million, or 10%, increase in funding for the Material Management Minimization program. The increase was mainly for the conversion subprogram, which is working to establish molybdenum-99 production technologies in the United States that do not use high enriched uranium (HEU), which can be used for nuclear weapons. The Energy and Water Development FY2023 appropriations for these programs totaled $2.49 billion, enacted as part of the Consolidated Appropriations Act, 2023 (P.L. 117-328, Division D). The FY2023 Supplemental Appropriations bills provided $35 million and $126.3 million for DNN activities in Ukraine.

As in past years, the FY2023 appropriations included a provision prohibiting funds in the Defense Nuclear Nonproliferation account from being used for certain activities and assistance in the Russian Federation. Appropriations bills have prohibited this since FY2015, although a waiver is allowed.[2]

The House passed the FY2023 Energy and Water Development appropriations bill December 23, 2022, as part of the FY2023 Consolidated Appropriations Act (P.L. 117-328). The House-passed measure included DNN appropriations of $2.424 billion, the same as recommended by the House Appropriations Committee and an increase of $77.7 million over the Administration request. The House Appropriations Committee report on the FY2023 Energy and Water Development funding bill (H.Rept. 117-394) recommended $20 million for the University Consortia for Nuclear Nonproliferation Research. It also specified $25 million for the Green Border Security Initiative within NSDD and "recognizes the importance of improving the security of border crossings to prevent nuclear smuggling and accelerating partnerships, particularly within Eastern Europe."

The Senate Appropriations Committee majority draft bill for FY2023 energy and water development appropriations allocated $2.095 billion for Defense Nuclear Nonproliferation, to include $30 million for the uranium reserve program.[3]

Surplus Plutonium Disposition Program

The United States pledged to dispose of 34 metric tons of U.S. surplus weapons plutonium, which was originally to be converted into fuel for commercial power reactors.[4] The U.S. facility for this purpose was to be the Mixed Oxide Fuel Fabrication Facility (MFFF), which had been under construction at the DOE Savannah River site in South Carolina. The MFFF faced sharply escalating construction and operation cost estimates, and the Obama Administration proposed to

[2] See the 2017 version of this report for more detailed background information.

[3] See CRS In Focus IF11505, *Uranium Reserve Program Proposal: Policy Implications*, by Lance N. Larson.

[4] Disposition of surplus plutonium is required by a 1998 agreement, amended in 2010, between the United States and the Russian Federation. Each country agreed to convert 34 metric tons of surplus weapons-grade plutonium to a form that could not be returned to nuclear weapons, to begin in 2018. Russia suspended its participation in the agreement in October 2016 due to what it called "hostile actions" by the United States. Both countries appear to be continuing their plans for surplus plutonium disposition. See CRS Report R43125, *Mixed-Oxide Fuel Fabrication Plant and Plutonium Disposition: Management and Policy Issues*, by Mark Holt and Mary Beth D. Nikitin.

terminate it in FY2017. After congressional approval, in 2018 DOE ended MFFF construction and began pursuing a replacement disposal method, Dilute and Dispose (D&D), for this material. This effort is called the Surplus Plutonium Disposition (SPD) Program.

The D&D method consists of "blending plutonium with an inert mixture, packaging it for safe storage and transport, and disposing of it in a geologic repository," according to the FY2024 request. Under the D&D method, plutonium is down-blended at Savannah River then shipped as transuranic waste to the Waste Isolation Pilot Plant (WIPP) in New Mexico. The Environmental Impact Statement for the project is expected to be completed in 2023, and the draft EIS was open for public comment in early 2023.[5]

The FY2024 budget request provides for plutonium disposition related activities in the Material Management and Minimization (Material Disposition subprogram) and the Nonproliferation Construction accounts. The budget request says the SPD project "will add glovebox capacity at the Savannah River Site to accelerate plutonium dilution and aid in the removal of plutonium from the state of South Carolina." In the coming years, NNSA plans to expand capability to disassemble and convert plutonium cores or "pits" for disposal. The FY2024 request says NNSA is completing the final design review to request approval and start full construction on the SPD project in FY2024, which represents a delay and cost increase. The request says the NNSA is "increasing the total project cost by $155 million resulting in a corresponding increase to the high-end of the cost range which is $775 million" and extending the completion date to the fourth quarter of FY2030. The budget request says that these changes are necessary due to design, safety, and construction challenges "of integrating the new mission into the exisiting facility and operations." It also cites a lack of skilled professional and craft labor, which is also an issue for other NNSA construction projects.

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[5] DOE/EIS-0549, https://www.energy.gov/nepa/doeeis-0549-surplus-plutonium-disposition-program

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