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

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

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The Department of Energy’s (DOE’s) nonproliferation and national security programs provide technical capabilities to support U.S. efforts to “prevent, counter, respond” to the proliferation of nuclear weapons worldwide, including by both states and non-state actors. 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. NNSA’s Office of Defense Nuclear Nonproliferation is funded under the Defense Nuclear Nonproliferation (DNN) account.

This report addresses the programs in the DNN account, appropriated by the Energy and Water appropriations bill. The FY2022 request for DNN appropriations was \$2.26 billion. The proposal included unobligated prior year balances. The reduction continues an earlier trend to reduce prior-year carryover balances. According to the budget justification, the increase of \$4 million, or 0.2%, from the FY2021-enacted level includes increases in Nonproliferation and Arms Control and DNN R&D programs, offset by the completion of Material Management and Minimization and Global Material Security.

FY2021 Energy and Water Development funding was enacted by Division D of the Consolidated Appropriations Act, 2021 (P.L. 116-260), signed by the President on December 27, 2020, and included \$2.26 billion for Defense Nuclear Nonproliferation. As in past years, the FY2021 appropriations included a provision prohibiting funds in the Defense Nuclear Nonproliferation account for certain activities and assistance in the Russian Federation. Appropriations bills have prohibited this since FY2015.

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## Budget Structure

The Defense Nuclear Nonproliferation (DNN) appropriation is organized under two main mission areas: the Defense Nuclear Nonproliferation Program and the Nuclear Counterterrorism and Incident Response Program (NCTIR).<sup>1</sup> The DNN Program's FY2022 request proposes moving the National Technical Nuclear Forensics Research and Development (NTNF R&D) into a subprogram of Defense Nuclear Nonproliferation Research and Development (DNN R&D).<sup>2</sup> The FY2022 request is divided into the following functional areas:

- **Materials 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.
- **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 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.
- **Defense Nuclear Nonproliferation Research and Development (DNN R&D)** advances U.S. capabilities to detect and characterize global nuclear security threats such as foreign nuclear material and weapons production, diversion of special nuclear material, and nuclear detonations. The National Technical Nuclear Forensics Research and Development (NTNF R&D) examines and evaluates nuclear materials and devices, nuclear test explosions or radiological dispersals, and post-detonation debris through nuclear forensics development at the national laboratories. The program includes a field capability to assist the interagency response in the event of a nuclear or radiological incident.
- The **Nonproliferation Construction** program supports M3 and the Surplus Plutonium Disposition Project (SPD), details 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.

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<sup>1</sup> Programs were reorganized starting with the FY2016 request, and NCTIR was previously funded under Weapons Activities. According to the FY2016 budget justification, "These transfers align all NNSA funding to prevent, counter, and respond to nuclear proliferation and terrorism in one appropriation."

<sup>2</sup> The \$40 million in funding for NTNF was moved from the DNN R&D Nuclear Detonation Detection subprogram in FY2021.

**Table I. DOE Defense Nuclear Nonproliferation Appropriation, FY2018-FY2021, and FY2022 Request**

(\$ thousands)

	FY2018 Enacted	FY2019 Enacted	FY2020 Enacted	FY2021 Enacted	FY2022 Request
Material Management and Minimization	308,594	293,794	363,533	400,711	342,946
Global Material Security	390,108	407,108	442,909	528,939	497,941
Nonproliferation and Arms Control	134,703	129,703	140,000	148,000	184,795
National Technical Nuclear Forensics R&D	0	0	0	40,000	0
Defense Nuclear Nonproliferation R&D	556,504	575,570	533,163	601,900	672,736
Nonproliferation Construction	335,000	220,000	299,000	148,589	156,000
Nuclear Counterterrorism	282,360	319,185	372,095	377,513	370,782
Legacy Contractor Pensions	40,950	28,640	13,700	14,348	38,800
Subtotal	2,048,219	1,949,000	2,164,400	2,260,000	2,264,000
Use of Prior Year Balances	0	-25,000	0		
Rescission of Prior Year Balances	-49,000	-19,000	0		
Total	1,999,219	1,930,000	2,164,400	2,260,000	2,264,000

**Source:** Department of Energy Congressional Budget Requests, Volume I.

## FY2022 Request

The FY2022 request for DNN appropriations totaled \$2.264 billion, reflecting a 0.2% increase from FY2021-enacted levels. The budget justification says that this change is due to completion of funding for Molybdenum-99 cooperative agreements and activities to address recovery and decontamination efforts associated with a container breach and release of material in Seattle, WA.<sup>3</sup> Decreases in the M3 and GMS accounts are to be offset by increases in the NPAC and DNN R&D accounts and use of prior year balances. The NPAS program proposes an “acceleration of a multilateral nonproliferation enrichment testing and training capability to improve current and future IAEA verification capabilities.” DNN R&D increases are “to develop arms control capabilities and vulnerability assessments, to establish an emerging and disruptive technologies initiative, to establish a nuclear forensics R&D university consortium,” and to accelerate the development of nonproliferation-related “testbeds” to identify threats.

<sup>3</sup> See also NNSA, “As Cleanup of Contaminated Seattle Building Nears Completion, Two Remediation Managers Discuss Lessons Learned,” December 9, 2020, <https://www.energy.gov/nnsa/articles/cleanup-contaminated-seattle-building-nears-completion-two-remediation-managers>.

As in past years, the FY2022 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 possible.<sup>4</sup>

## **U.S. Plutonium Disposition**

The FY2022 budget justification requests funds related to the U.S. plutonium disposition program in the M3 Material Disposition subprogram and Nonproliferation Construction Surplus Plutonium Disposition subprogram. 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.<sup>5</sup> 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 terminate it in FY2017. After congressional approval, in 2018 DOE ended MFFF construction and began pursuing an alternative disposal method, Dilute and Dispose (D&D), for this material.

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 FY2021 request. The Nonproliferation Construction account’s proposed decrease of \$150 million in FY2021 was due to the final steps in ending construction of the MFFF. In her testimony before the House Appropriations Committee, NNSA Administrator Lisa Gordon-Hagerty said the decrease reflected the completion of the MOX contractual termination settlement. She said that the requested \$148.6 million would be used for the Surplus Plutonium Disposition (SPD) project, in support of the D&D method. FY2021 activities would include “execution of early site preparation and long lead procurements activities, as well as continuing the maturation of the design for all major systems supporting the plutonium processing gloveboxes.”<sup>6</sup>

The House Appropriations Committee report on the FY2021 Energy and Water Development funding bill (H.Rept. 116-449) says that it did not provide any funds for transfer of plutonium from South Carolina to Nevada and recommended “efforts to engage the interagency and international partners as appropriate on mutually beneficial plutonium disposition protocols.”

The FY2022 request says NNSA will use prior year balances to close out MFFF activities in FY2022. The proposed appropriation would support “the completion at the Savannah River Site of the first glovebox fabrication, shipment, receipt, and fabrication of the HEPA Filter Housings and Diesel Generator, completion of site preparation activities, and final design in support of Critical Decision (CD)-2/3, as well as continues longlead procurements for the SPD Project.” It would also add glovebox capacity “to accelerate plutonium dilution and aid in the removal of plutonium from the state of South Carolina.”

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<sup>4</sup> See the 2017 version of this report for more detailed background information.

<sup>5</sup> 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.

<sup>6</sup> A glovebox is a sealed, transparent chamber with openings in the sides where sleeves and gloves are attached. Workers can put their hands in the gloves to manipulate radioactive materials inside without becoming contaminated.

## **FY2021 Appropriations**

The House passed the FY2021 Energy and Water Development appropriations bill July 31, 2020, as part of the second FY2021 Consolidated Appropriations Act (H.R. 7617). The House-passed measure included DNN appropriations of \$2.24 billion, the same as recommended by the House Appropriations Committee and an increase of \$209 million (10%) over the Administration request.

The Senate Appropriations Committee majority draft bill for FY2021 energy and water development appropriations allocated \$2.095 billion for Defense Nuclear Nonproliferation, to include \$30 million for the uranium reserve program.<sup>7</sup> The Senate Appropriations Committee did not act on the bill.

FY2021 Energy and Water Development funding was enacted in Division D of the Consolidated Appropriations Act, 2021 (P.L. 116-260), signed by the President on December 27, 2020. The measure included \$2.26 billion for Defense Nuclear Nonproliferation.

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<sup>7</sup> See CRS In Focus IF11505, *Uranium Reserve Program Proposal: Policy Implications*, by Lance N. Larson.