DOE/CF-0202
Volume 1

Department of Energy
FY 2025 Congressional Justification

National Nuclear Security Administration

Federal Salaries and Expenses
Weapons Activities
Defense Nuclear Nonproliferation
Naval Reactors

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DEPARTMENT OF ENERGY
Appropriation Summary
FY 2025
(Dollars in Thousands)

	FY 2023 Enacted [1],[2],[3]	FY 2024 Annualized CR	FY 2025 President's Budget [4]	FY 2025 President's Budget vs. FY 2023 Enacted $	%
Department of Energy Budget by Appropriation					
Energy Efficiency and Renewable Energy	3,460,000	3,460,000	3,118,000	-342,000	-9.9%
Electricity	350,000	350,000	293,000	-57,000	-16.3%
Cybersecurity, Energy Security and Emergency Response (270)	200,000	200,000	200,000	0	0.0%
Strategic Petroleum Reserve	207,175	207,175	241,169	+33,994	+16.4%
Naval Petroleum and Oil Shale Reserves	13,004	13,004	13,010	+6	+0.0%
SPR Petroleum Account	100	100	100	0	0.0%
Northeast Home Heating Oil Reserve	7,000	7,000	7,150	+150	+2.1%
Office of Petroleum Reserves	**227,279**	**227,279**	**261,429**	**+34,150**	**+15.0%**
Nuclear Energy (270)	1,623,000	1,623,000	1,440,660	-182,340	-11.2%
Fossil Energy and Carbon Management	890,000	890,000	900,000	+10,000	+1.1%
Uranium Enrichment Decontamination and Decommissioning (UED&D)	879,052	879,052	854,182	-24,870	-2.8%
Energy Information Administration	135,000	135,000	141,653	+6,653	+4.9%
Non-Defense Environmental Cleanup	358,583	358,583	314,636	-43,947	-12.3%
Science	8,100,000	8,100,000	8,583,000	+483,000	+6.0%
Office of Technology Transitions	22,098	22,098	27,098	+5,000	+22.6%
Office of Clean Energy Demonstrations	89,000	89,000	180,000	+91,000	+102.2%
Federal Energy Management Program	0	0	64,000	+64,000	N/A
Grid Deployment Office	0	0	101,870	+101,870	N/A
Office of Manufacturing & Energy Supply Chains	0	0	113,350	+113,350	N/A
Office of State and Community Programs	0	0	574,000	+574,000	N/A
Advanced Research Projects Agency - Energy	470,000	470,000	450,000	-20,000	-4.3%
Nuclear Waste Disposal Fund	10,205	10,205	12,040	+1,835	+18.0%
Departmental Administration	283,000	283,000	334,671	+51,671	+18.3%
Indian Energy Policy and Programs	75,000	75,000	95,000	+20,000	+26.7%
Inspector General	86,000	86,000	149,000	+63,000	+73.3%
Title 17 Innovative Technology Loan Guarantee Program	-136,018	-71,362	-184,558	-48,540	+35.7%
Advanced Technology Vehicles Manufacturing Loan Program	9,800	9,800	27,508	+17,708	+180.7%
Tribal Energy Loan Guarantee Program	4,000	4,000	6,300	+2,300	+57.5%
Total, Credit Programs	**-122,218**	**-57,562**	**-150,750**	**-28,532**	**+23.3%**
Energy Projects	221,969	221,969	0	-221,969	-100.0%
Critical and Emerging Technologies	0	0	5,000	+5,000	N/A
Total, Energy Programs	**17,357,968**	**17,422,624**	**18,061,839**	**+703,871**	**+4.1%**
Weapons Activities	17,116,119	17,116,119	19,848,644	+2,732,525	+16.0%
Defense Nuclear Nonproliferation	2,490,000	2,490,000	2,465,108	-24,892	-1.0%
Naval Reactors	2,081,445	2,081,445	2,118,773	+37,328	+1.8%
Federal Salaries and Expenses	475,000	475,000	564,475	+89,475	+18.8%
Total, National Nuclear Security Administration	**22,162,564**	**22,162,564**	**24,997,000**	**+2,834,436**	**+12.8%**
Defense Environmental Cleanup	7,025,000	7,025,000	7,059,695	+34,695	+0.5%
Other Defense Activities	1,035,000	1,035,000	1,140,023	+105,023	+10.1%
Defense Uranium Enrichment D&D	586,035	586,035	384,957	-201,078	-34.3%
Total, Environmental and Other Defense Activities	**8,646,035**	**8,646,035**	**8,584,675**	**-61,360**	**-0.7%**
Nuclear Energy (050)	150,000	150,000	150,000	0	0.0%
Total, Atomic Energy Defense Activities	**30,958,599**	**30,958,599**	**33,731,675**	**+2,773,076**	**+9.0%**
Southeastern Power Administration	0	0	0	0	N/A
Southwestern Power Administration	10,608	10,608	11,440	+832	+7.8%
Western Area Power Administration	98,732	98,732	100,855	+2,123	+2.2%
Falcon and Amistad Operating and Maintenance Fund	228	228	228	0	0.0%
Colorado River Basins Power Marketing Fund	0	0	0	0	N/A
Total, Power Marketing Administrations	**109,568**	**109,568**	**112,523**	**+2,955**	**+2.7%**
Federal Energy Regulatory Commission	0	0	0	0	N/A
Total, Energy and Water Development and Related Agencies	**48,426,135**	**48,490,791**	**51,906,037**	**+3,479,902**	**+7.2%**
Sale of the Gas Reserves	0	0	-95,000	-95,000	N/A
Excess Fees and Recoveries, FERC	-9,000	-9,000	-9,000	0	0.0%
Title XVII Loan Guar. Prog Section 1703 Negative Credit Subsidy Receipt	-14,000	-14,000	-2,051	+11,949	-85.4%
UED&D Fund Offset	-586,035	-586,035	-384,957	+201,078	-34.3%
Discretionary Funding by Appropriation	**47,817,100**	**47,881,756**	**51,415,029**	**+3,597,929**	**+7.5%**
DOE Budget Function	**47,817,100**	**47,881,756**	**51,415,029**	**+3,597,929**	**+7.5%**
NNSA Defense (050) Total	22,162,564	22,162,564	24,997,000	+2,834,436	+12.8%
Non-NNSA Defense (050) Total	8,796,035	8,796,035	8,734,675	-61,360	-0.7%
Defense (050)	*30,958,599*	*30,958,599*	*33,731,675*	+2,773,076	+9.0%
Science (250)	8,100,000	8,100,000	8,583,000	+483,000	+6.0%
Energy (270)	8,758,501	8,823,157	9,100,354	+341,853	+3.9%
Non-Defense (Non-050)	*16,858,501*	*16,923,157*	*17,683,354*	+824,853	+4.9%

[1] Funding does not reflect the mandated transfer of $99.75 million in FY 2023 from Naval Reactors to the Office of Nuclear Energy and the inclusion of the mandated transfer in the calculation of the rate of operations for FY 2024 for operation of the Advanced Test Reactor.

[2] Funding does not reflect the transfer of $20 million from the Office of Nuclear Energy to the Office of Science for Nuclear Facilities Oak Ridge National Laboratory Operations and Maintenance.

[3] FY 2023 Enacted levels for base funding includes $300 million for the Office of Nuclear Energy that was enacted in Division M, Additional Ukraine Supplemental Appropriations, of the Consolidated Appropriations Act, 2023 (P.L. 117-328).

[4] FY 2025 levels include the reallocation of $173 million in funding from Defense Environmental Cleanup to Weapons Activities to support the transition of oversight of the Savannah River Site to NNSA.

National Nuclear Security Administration
Overview ($K)

	FY 2023 Enacted[a]	FY 2024 Annualied CR [a b]	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
National Nuclear Security Administration					
Federal Salaries and Expenses	475,000	475,000	564,475	+89,475	+18.8%
Weapons Activities	17,116,119	17,116,119	19,848,644	+2,732,525	+16.0%
Defense Nuclear Nonproliferation	2,490,000	2,490,000	2,465,108	-24,892	-1.0%
Naval Reactors	2,081,445	2,081,445	2,118,773	+37,328	+1.8%
Subtotal, NNSA	**22,162,564**	**22,162,564**	**24,997,000**	**+2,834,436**	**+12.8%**
Total, National Nuclear Security Administration	**22,162,564**	**22,162,564**	**24,997,000**	**+2,834,436**	**+12.8%**

The National Nuclear Security Administration (NNSA) FY 2025 Request is $24,997,000,000, an increase of $2,834,436,000 (12.8 percent) above the FY 2023 Enacted Level to support the security and safety of the Nation. NNSA's FY 2025 Budget Request pursues five major national security endeavors: (1) maintain a safe, secure, reliable, and effective nuclear weapons stockpile; (2) reduce global nuclear threats and keep nuclear and radiological materials out of the hands of terrorists; (3) strengthen key science, technology and engineering capabilities in support of certification, assessment, and current and future life extension programs; (4) provide safe and militarily-effective integrated nuclear propulsion systems for the U.S. Navy; and (5) modernize the Nuclear Security infrastructure. Key to all these efforts is the necessary Federal oversight for growing mission requirements. NNSA has pursued a disciplined process to meet nuclear security and nonproliferation policy goals and requirements, support the Navy, and support a highly skilled federal workforce. The FY 2025 Budget request for NNSA includes full support for modernizing all three legs of the nuclear triad and utilizing all aspects of the nation's deterrence capability. This includes enduring support for arms control, risk reduction measures, and nuclear safeguards as well as counterterrorism and counterproliferation measures. The FY 2025 Budget Request will provide the resources necessary to maintain and certify the effectiveness of the nation's nuclear deterrent, supporting NNSA's cutting-edge science and technology program.

National Nuclear Security Administration
Outyear Funding ($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
National Nuclear Security Administration				
Federal Salaries and Expenses	**610,324**	**623,344**	**636,579**	**650,157**
Weapons Activities	**20,649,896**	**21,338,052**	**21,875,397**	**22,359,585**
Defense Nuclear Nonproliferation	**2,602,061**	**2,657,640**	**2,714,083**	**2,772,046**
Naval Reactors	**2,211,719**	**2,258,964**	**2,306,941**	**2,356,212**
Subtotal, NNSA	**26,074,000**	**26,878,000**	**27,533,000**	**28,138,000**
Total, National Nuclear Security Administration	**26,074,000**	**26,878,000**	**27,533,000**	**28,138,000**

NNSA Future-Years Nuclear Security Program
NNSA's Future Years Nuclear Security Program (FYNSP) topline for FY 2026 – FY 2029 is $108.6 billion. The Request continues to modernize America's nuclear stockpile and infrastructure, and the underlying science that supports strategic decisions and certification of the stockpile, as detailed in the annual *Stockpile Stewardship and Management Plan (SSMP)*. The Request supports the U.S. Navy's nuclear fleet through safe and effective integrated nuclear propulsion systems. The

[a] FY 2023 Enacted in both the tables and narrative excludes the mandated transfer of $99.75 million from Naval Reactors to the Office of Nuclear Energy for operation of the Advanced Test Reactor as well as supplemental appropriations for Ukraine support totaling $161.3 million within Defense Nuclear Nonproliferation.
[b] Similarly, FY 2024 Annualized CR for Naval Reactors does not reflect the inclusion of the mandated transfer in the calculation of the rate of operations.

Request also supports the nonproliferation goals outlined in NNSA's *Prevent, Counter, and Respond—A Strategic Plan to Reduce Global Nuclear Threats (NPCR)*.

Public Law Authorizations

- P.L. 106-65, National Nuclear Security Administration Act, as amended
- P.L. 118-10, National Defense Authorization Act for Fiscal Year 2024
- P.L. 117-397, National Defense Authorization Act for Fiscal Year 2023
- P.L. 117-328, Consolidated Appropriations Act, 2023

Appropriation Summary by Program
Funding ($K)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
NNSA Summary by Appropriation / GPRA Unit					
Federal Salaries and Expenses Appropriation					
Program Direction	491,800	491,800	564,475	+72,675	+14.8%
Use of Prior Year Balances	-16,800	-16,800	0	+16,800	-100.0%
Total, Federal Salaries and Expenses	**475,000**	**475,000**	**564,475**	**+89,475**	**+18.8%**
Weapons Activities Appropriation					
Stockpile Management	4,954,107	4,954,107	5,140,688	+186,581	+3.8%
Production Modernization	5,116,705	5,116,705	5,877,692	+760,987	+14.9%
Stockpile Research, Technology, and Engineering	2,949,996	2,949,996	3,174,152	+224,156	+7.6%
Academic Programs and Community Support	111,912	111,912	128,188	+16,276	+14.5%
Infrastructure and Operations	2,602,580	2,602,580	3,299,866	+697,286	+26.8%
Secure Transportation Asset	344,437	344,437	371,424	+26,987	+7.8%
Defense Nuclear Security	872,100	872,100	1,180,000	+307,900	+35.3%
Information Technology and Cybersecurity	445,654	445,654	646,000	+200,346	+45.0%
Legacy Contractor Pensions and Settlement Payments	114,632	114,632	30,634	-83,998	-73.3%
Subtotal, Weapons Activities	17,512,123	17,512,123	19,848,644	+2,336,521	+13.3%
Use of Prior Year Balances	-396,004	-396,004	0	+396,004	-100.0%
Total, Weapons Activities	**17,116,119**	**17,116,119**	**19,848,644**	**+2,732,525**	**+16.0%**
Defense Nuclear Nonproliferation Appropriation					
Defense Nuclear Nonproliferation Programs					
Material Management and Minimization	464,285	464,285	377,097	-87,188	-18.8%
Global Material Security	532,763	532,763	543,864	+11,101	+2.1%
Nonproliferation and Arms Control	230,656	230,656	224,980	-5,676	-2.5%
Defense Nuclear Nonproliferation R&D	767,902	767,902	802,850	+34,948	+4.6%
NNSA Bioassurance Program	20,000	20,000	0	-20,000	-100.0%
Nonproliferation Construction	71,764	71,764	40,000	-31,764	-44.3%
Subtotal, Defense Nuclear Nonproliferation Programs	2,087,370	2,087,370	1,988,791	-98,579	-4.7%
Nuclear Counterterrorism and Incident Response Program	469,970	469,970	536,189	+66,219	+14.1%
Legacy Contractor Pensions and Settlement Payments	55,708	55,708	7,128	-48,580	-87.2%
Subtotal, Defense Nuclear Nonproliferation Appropriation	**2,613,048**	**2,613,048**	**2,532,108**	**-80,940**	**-3.1%**
Use of Prior Year Balances	-123,048	-123,048	(67,000)	+56,048	-45.5%
Total, Defense Nuclear Nonproliferation Appropriation	**2,490,000**	**2,490,000**	**2,465,108**	**-24,892**	**-1.0%**
Naval Reactors Appropriation					
Naval Reactors Programs	2,081,445	2,081,445	2,118,773	+37,328	+1.8%
Total, Naval Reactors Appropriation	**2,081,445**	**2,081,445**	**2,118,773**	**+37,328**	**+1.8%**
Total, National Nuclear Security Administration	**22,162,564**	**22,162,564**	**24,997,000**	**+2,834,436**	**+12.8%**

Appropriation Summary by Program
Outyear Funding ($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
NNSA Summary by Appropriation / GPRA Unit				
Federal Salaries and Expenses Appropriation				
Program Direction	610,324	623,344	636,579	650,157
Total, Federal Salaries and Expenses	**610,324**	**623,344**	**636,579**	**650,157**
Weapons Activities Appropriation				
Stockpile Management	5,235,812	5,535,452	5,581,981	5,612,950
Production Modernization	6,290,509	6,618,531	6,955,553	6,918,660
Stockpile Research, Technology, and Engineering	3,219,800	3,221,132	3,180,637	3,310,908
Academic Programs and Community Support	121,851	121,851	121,851	121,851
Infrastructure and Operations	3,449,864	3,391,457	3,528,087	3,812,215
Secure Transportation Asset	412,173	457,641	461,716	464,955
Defense Nuclear Security	1,150,747	1,202,656	1,254,054	1,280,007
Information Technology and Cybersecurity	704,934	748,463	752,087	798,334
Legacy Contractor Pensions and Settlement Payments	64,206	40,869	39,431	39,705
Subtotal, Weapons Activities	20,649,896	21,338,052	21,875,397	22,359,585
Total, Weapons Activities	**20,649,896**	**21,338,052**	**21,875,397**	**22,359,585**
Defense Nuclear Nonproliferation Appropriation				
Defense Nuclear Nonproliferation Programs				
Material Management and Minimization	388,836	405,623	414,559	433,527
Global Material Security	550,949	561,414	594,639	626,807
Nonproliferation and Arms Control	222,870	224,483	239,193	243,029
Defense Nuclear Nonproliferation R&D	820,571	843,864	858,377	874,337
Nonproliferation Construction	50,980	59,354	41,540	13,080
Total, Defense Nuclear Nonproliferation Programs	**2,034,206**	**2,094,738**	**2,148,308**	**2,190,780**
Nuclear Counterterrorism and Incident Response Program	546,862	548,774	551,407	566,974
Legacy Contractor Pensions and Settlement Payments	20,993	14,128	14,368	14,292
Subtotal, Defense Nuclear Nonproliferation Appropriation	2,602,061	2,657,640	2,714,083	2,772,046
Total, Defense Nuclear Nonproliferation Appropriation	**2,602,061**	**2,657,640**	**2,714,083**	**2,772,046**
Naval Reactors Appropriation				
Naval Reactors Programs	2,211,719	2,258,964	2,306,941	2,356,212
Total, Naval Reactors Appropriation	**2,211,719**	**2,258,964**	**2,306,941**	**2,356,212**
Subtotal, NNSA	**26,074,000**	**26,878,000**	**27,533,000**	**28,138,000**
Total, National Nuclear Security Administration	**26,074,000**	**26,878,000**	**27,533,000**	**28,138,000**

NNSA Overview

Overview

The FY 2025 Request for **Weapons Activities (WA)** is $19,848,644,000 a $2,732,525,000 (16.0 percent) increase above the FY 2023 Enacted Level.

Programs funded in the Weapons Activities appropriation support the Nation's current and future defense posture and necessary nationwide infrastructure of science, technology, engineering, and production capabilities to maintain the stockpile without underground nuclear explosive testing. Weapons Activities provides for the maintenance and refurbishment of nuclear weapons to continue sustained confidence in their safety, reliability, and military effectiveness; investment in scientific, engineering, manufacturing capabilities for certification of the enduring nuclear weapons stockpile; and manufacture of nuclear weapon components. Weapons Activities also provides for maintenance and investment in the National Nuclear Security Administration (NNSA) nuclear complex infrastructure to be more responsive and resilient.

The FY 2025 Request for **Defense Nuclear Nonproliferation (DNN)** is $2,465,108,000, a -$24,892,000 (1.0 percent) decrease from the FY 2023 Enacted Level. The decrease is largely driven by reduced programmatic requirements in Material Management and Minimization, as well as the use of carryover for FY 2025 scope in the Surplus Plutonium Disposition project and Legacy Contractor Pensions and Settlement Payments. It includes targeted increases to strengthen key nonproliferation, nuclear and radiological security, and nuclear incident response capabilities necessary to protect the nation in a world that is more complex geopolitically and technologically. Increases are specifically requested to meet growing demands in counterterrorism and counterproliferations capabilities, including Red Teaming capabilities for a wide range of open-source and industry Artificial Intelligence (AI) systems, for the establishment of the Space Monitoring and Verification Program (Space MVP) to support the Outer Space Treaty , and to increase outreach to high-priority partners in Southeast Asia to address smuggling vulnerabilities and counter Chinese influence.

The Defense Nuclear Nonproliferation (DNN) appropriation funds six programs in the FY 2025 Budget Request to reduce the threats of weapons of mass destruction (WMD). These programs: provide policy and technical leadership to prevent or limit the spread of WMD-related materials, technology, and expertise; develop technologies to detect nuclear proliferation; verify international agreements and arrangements; secure or eliminate inventories of nuclear weapons-related materials and infrastructure; ensure nuclear emergency support team (NEST) personnel are trained and equipped to respond to all manner of nuclear and radiological incidents worldwide, including the ability to perform advanced nuclear forensics assessments; and apply a comprehensive and integrated approach to emergency management and continuity of operations to safeguard health and safety, protect the environment, and enhance the resilience of the Department and the Nation.

The FY 2025 Request for **Naval Reactors (NR)** is $2,118,773,000, a $37,328,000 (1.8 percent) increase from the FY 2023 Enacted Level. Increases are requested for infrastructure modernization and investments to develop, refine, and deliver new technologies to the Navy and maintain America’s advantage over its adversaries.

The FY 2025 Request for NNSA **Federal Salaries and Expenses (FSE)** is $564,475,000, a $89,475,000 (18.8 percent) increase above the FY 2023 Enacted Level for the salaries, benefits, and the other expenses of 2,084 federal full-time equivalents (FTEs), 2,060 directly paid from FSE and 24 paid through the Working Capital Fund. The increase reflects the funding required for 220 FTE above the FY 2023 level, including up to 85 from the Office of Environmental Management related to the transfer of management responsibility for the Savannah River Site. The request also provides funding for travel, training, support service contracts, space and occupancy needs, funding for the Department of Energy’s (DOE) Working Capital Fund, and other expenses. FSE funds recruiting, training, and retention of federal staff to perform program and project management and oversight of approximately $22.3 billion in Weapons Activities (WA) and Defense Nuclear Nonproliferation (DNN) funding across the nuclear security enterprise.

Highlights and Major Changes in the FY 2025 Request

Weapons Activities

Stockpile Management - The Stockpile Management program encompasses five major subprograms that directly support the Nation’s nuclear weapons stockpile. In FY 2025, **Stockpile Major Modernization** is scheduled to continue to execute Phase 6.6 (*Full-Scale Production*) activities including completion of Last Production Unit (LPU) for the B61-12 Life Extension

Program (LEP) and W88 Alteration (ALT) 370; conduct the B61-13 *Phase 6.3 and 6.4 (Development/Production Engineering)* continue Phase 6.4 (*Production Engineering*) activities for the W80-4 LEP; continue Phase 6.3 (*Development Engineering*) activities for the W87-1 Modification Program; and continue and complete Phase 2 (*Feasibility Study and Design Options)* for the W93 Program. The W93 will commence Phase 2A (Feasibility and Cost Study). While a dedicated line item for the Sea Launched Cruise Missile (SLCM) is not currently included in the FY 2025 request, NNSA is proposing $1,165M for the W80-4 warhead which the NDAA associates with SLCM-N. NNSA will comply with the NDAA requirement and will work with the Navy to execute in a manner that provides the most deterrence value for the least risk to the modernization program, the production enterprise, and the military. **Stockpile Sustainment** will execute the activities necessary to sustain a safe, secure, reliable, and effective stockpile. **Weapons Dismantlement and Disposition (WDD)** will provide safe and secure dismantlement of nuclear weapons and components and continue legacy component disposition. **Production Operations (PO)** will provide site-specific, production-enabling capabilities to enable weapons production, including process improvements and investments focused on increased efficiency of production performance. **Nuclear Enterprise Assurance (NEA)** will prevent, detect, and mitigate potential consequences of subversion, both to the stockpile and to the associated capabilities to design, produce, and test nuclear weapons.

Production Modernization - Production Modernization is responsible for modernizing the facilities, infrastructure, and equipment that produce materials and components to meet stockpile requirements and maintain the Nation's nuclear deterrent. The program encompasses six major subprograms that sustain the Nation's nuclear weapons stockpile. In FY 2025, the requested increase supports Los Alamos Pit Production equipment purchases and installation activities and the hiring, training, qualification, and retention of additional staff to support the war reserve (WR) pit production ramp-up; investments to reduce risk in depleted uranium and lithium operations, support depleted uranium operations beyond the 2030s, and support new necessary capabilities to produce other future weapon system components; labor and material purchases for Domestic Uranium Enrichment centrifuge development as the program advances towards larger-scale research and development (R&D) demonstrations. Increase also reflects completion of the DUE Pilot Plant options study and the initiation of design activities for the DUE Pilot Plant; support for the Kansas City expansion efforts through equipment procurements and the modernization of environmental testing capabilities at Sandia National Laboratories, critical to ensuring non-nuclear components can survive Stockpile to Target Sequence environments; modernization of scientific and manufacturing capabilities that have degraded due to aging, broken, or outdated equipment and supporting systems; and initiation of a new program to modernize the capabilities needed to execute warhead assembly/disassembly operations.

Stockpile Research, Technology, and Engineering (SRT&E) - SRT&E provides the scientific foundation for science-based stockpile decisions and actions; develops the personnel required to support the current and future stockpile; and includes the capabilities, tools, and components needed to support all missions. The FY 2025 funding supports the continued implementation of the Enhanced Capabilities for Subcritical Experiments (ECSE) and preparations for the deployment of NNSA's first exascale high-performance computing system. These two capabilities are required to meet W80-4 LEP confirmation experiment and reduce uncertainty in W87-1 Modification certification. The Inertial Confinement Fusion (ICF) program leverages its experimental design expertise and computational modeling tools, diagnostic technology, target engineering and fabrication infrastructure, and national High-Energy-Density (HED) facilities to ensure high fidelity experimental capabilities and data are available to support a range of NNSA missions. The program represents the only experimental option available to address many of the weapon relevant HED science challenges without resuming underground explosive nuclear testing. In addition to the procurement and utilization of NNSA's first exascale machine, funding supports the development and deployment of improved physics and engineering codes needed to support stockpile decisions to operate on this new platform. Funding in this area also supports the development of new materials, technologies, and processes to modernize the nuclear systems and production complex, as well as supporting several experimental testbed capabilities. This is accomplished through warhead component and production technology development and maturation.

Academic Programs and Community Support (AP&CS) - AP&CS enables robust and diverse science, technology, engineering, and mathematics (STEM) research for educational communities through a variety of methods (i.e., grants, fellowships, collaborations, user access). Investments in consortia and centers of excellence provide collaborative groups to address important scientific and technical questions related to NNSA mission areas. Research efforts leverage multi-disciplinary approaches, and preeminent scientists in relevant fields. This program also includes a Community Capacity Building Program to provide benefits to communities affected by activities at NNSA's sites.

Infrastructure and Operations (I&O) – I&O maintains, operates, and modernizes the NNSA infrastructure in a safe and secure manner to support program execution while seeking to maximize return on investment and reduce enterprise risk. The program plans, prioritizes, and constructs facilities and infrastructure to support all NNSA programs, except for new complex-construction projects, which are funded by the capability sponsor. The FY 2025 Request provides funding for activities to enable plutonium pit production, expand capacity at the Kansas City National Security Campus (KCNSC), and address infrastructure modernization throughout the complex. Furthermore, the funding allows NNSA to execute Recapitalization projects to improve the condition and extend the design life of structures, capabilities, and systems to meet program demands. The requested funding will reduce future operating costs by replacing older facilities with new, more efficient facilities. Additionally, the funding will and reduce safety, security, environment, and program risk. Funding is also requested to support ongoing Savannah River Site activities previously funded in Defense Environmental Cleanup, as well as infrastructure investments necessary to begin transitioning SRS to an enduring mission site.

I&O contains funds that provide safety oversight, manage nuclear material accountability, packaging and transportation expertise, waste management, and environmental support to both existing and emerging missions. The FY 2025 Request includes increased funding for the Pantex Plant to address groundwater contamination.

Secure Transportation Asset (STA) - STA supports safe, secure transport of the Nation's nuclear weapons, weapon components, and special nuclear material throughout the National Security Enterprise (NSE). Nuclear weapon life-extension programs, limited-life component exchanges, surveillance, dismantlement, nonproliferation activities, and experimental programs rely on STA activities to ensure safe, secure, and on-schedule transport. The FY 2025 Request supports modernizing and sustaining STA transportation assets, including life extension of the Safeguards Transporter until it is replaced by the Mobile Guardian Transporter; vehicle sustainment; replacement of armored tractors, escort, and support vehicles; upgrades of the Tractor Control Unit to accommodate for communications and security; and continued development and testing of the Mobile Guardian Transporter. The first Mobile Guardian Transporter production unit is planned for completion as close to FY 2029 as possible and will begin a phased in approach to replace the current Safeguard Transporter. Program Direction resources in this account provide salaries and expenses for the secure transportation workforce, including Federal Agents.

Defense Nuclear Security (DNS) - DNS provides protection for NNSA personnel, facilities, nuclear weapons, and materials from a full spectrum of threats, ranging from minor security threats to acts of terrorism. DNS is responsible for security at NNSA's national laboratories, production plants, processing facilities, and the Nevada National Security Site (NNSS). Employing more than 1,800 Protective Force officers, DNS secures more than 5,000 buildings and protects more than 69,000 personnel. The FY 2025 request includes funding to fill positions in key security program areas required to implement a risk-based, layered protection strategy at the sites. The request also supports increased security needs associated with known mission growth in weapons programs across the NSE, including plutonium pit production, Kansas City expansion efforts, and preparation for transition to operations of the Uranium Processing Facility (UPF). In addition, the request reflects support for FY 2025 Core Security requirements, support for Savannah River Site safeguards and security activities previously funded in Defense Environmental Cleanup, initiatives for the Physical Security Center of Excellence (PSCOE) and the Center for Security Technology, Analysis, Response, and Testing (CSTART), as well as funding for the WEPAR project, which will install a new Perimeter Intrusion Detection and Assessment System (PIDAS) section, thus reducing the Y-12 National Security Complex (Y-12) Protected Area by approximately 50% while integrating with the UPF.

Information Technology (IT) and Cybersecurity - The NNSA Office of the Associate Administrator for Information Management and Chief Information Officer (OCIO) is responsible for information management, information technology (IT), and cybersecurity for the NNSA enterprise. The OCIO supports IT and cybersecurity services and solutions, which include continuous monitoring, cloud-based technologies, and enterprise security technologies (i.e., identity, credential, and access management). As a mission partner, OCIO ensures and enables the availability of a secure infrastructure for mission activities and information sharing for the NNSA and its mission partners. The office manages the IT portfolio, federal IT investments, services, and projects in alignment with the NNSA and the Department of Energy Office of the Chief Information Officer strategies, as well as other national policy drivers. The FY 2025 Request enables the development and execution of integrated IT initiatives that provide an effective and secure technology infrastructure across the enterprise.

Defense Nuclear Nonproliferation

Material Management and Minimization (M3)- M3 programs reduce and, when possible, eliminate weapons-usable nuclear material around the world to achieve permanent threat reduction. The FY 2025 Budget Request supports the conversion or shutdown of research reactors and isotope production facilities that use highly enriched uranium (HEU), the qualification of new low-enriched uranium (LEU) fuels, the support of non-HEU-based molybdenum-99 (Mo-99) production facilities in the United States, the optimization of proliferation resistance in reactor designs, the high-assay low-enriched uranium (HALEU) recovery project, the removal and disposal of weapons-usable nuclear material, activities to disposition plutonium from the state of South Carolina, implementation of the dilute and dispose strategy for plutonium disposition, and downblending HEU.

Global Material Security (GMS) - GMS directly contributes to national security efforts to reduce global nuclear and radiological security threats and plays a leading role in implementing *National Security Memorandum-19 to Counter Weapons of Mass Destruction Terrorism and Advance Nuclear and Radioactive Material Security*. The FY 2025 Budget Request supports programs to prevent terrorists and other actors from obtaining nuclear and radioactive material to use in an improvised nuclear device (IND) or a radiological dispersal device (RDD) by working domestically and with partner countries to improve the security of vulnerable materials and facilities and to build partners' capacity to detect, disrupt, and investigate illicit trafficking of these materials. GMS works with countries in bilateral partnerships, and with multilateral partners such as the IAEA, the Global Partnership against the Spread of Weapons and Materials of Mass Destruction, the WCO, the United Nations Office on Drugs and Crime (UNODC), and INTERPOL. GMS is leveraging its over 20 years of security expertise and global presence in over 100 countries to respond and adapt to the changing threat environment. Across its three subprograms, GMS is reinforcing partnerships in Eastern Europe, Central Asia, and Southeast Asia to counter Russian and Chinese influence, expanding its work to bolster energy security of critical nuclear power plants, promoting security-by-design for advances and small modular reactors, increasing its investment in non-radioisotopic alternative technologies, and continues to expand its counter nuclear smuggling engagement with law enforcement and security institutions.

Nonproliferation and Arms Control (NPAC) - NPAC programs contribute to standing DOE/NNSA statutory and treaty/agreement obligations and authorities, prevent nuclear and dual-use technology from being exploited or diverted by adversaries, identify emerging technologies of potential proliferation concern, and consider ways to mitigate them. NPAC programs also strengthen the international nuclear safeguards regime and the IAEA's ability to verify peaceful uses of nuclear materials and facilities and detect non-compliance or illicit diversion of materials, reduce proliferation concerns by enabling verifiable arms reductions, and support negotiation and implementation of U.S. nonproliferation and arms control treaties and agreements, while upholding U.S. requirements for maintaining a safe, secure, and reliable nuclear weapons stockpile are met. The FY 2025 Budget Request supports IAEA and partner countries' efforts to implement international safeguards obligations, builds domestic and international capacity to implement export control obligations, supports the negotiation and implementation of agreements and associated monitoring regimes to verifiably reduce nuclear weapons and nuclear programs, continues development of the Arms Control Advancement Initiative (ACAI) including detailed planning for construction related to the high-fidelity verification user facility, and develops approaches and strategies to address emerging nonproliferation and arms control challenges and opportunities.

Defense Nuclear Nonproliferation Research and Development (DNN R&D) - DNN R&D directly contributes to nuclear security by developing U.S. capabilities to detect and characterize global nuclear security threats in full coordination with the goals and priorities of U.S. Government mission stakeholders across nonproliferation, counterterrorism, and emergency response mission areas. In addition, DNN R&D sustains and develops foundational nonproliferation technical capabilities that ensure the technical agility needed to support a broad spectrum of U.S. nonproliferation missions and anticipate threats. To do these activities, DNN R&D leverages the unique facilities and scientific skills of DOE, academia, and industry to perform research and demonstrate advances in capabilities, develop prototypes, and produce sensors for integration into operational systems. The FY 2025 Budget Request supports planned activities for the early detection of proliferation-related R&D and continued production of nuclear detonation detection satellite payloads. It renews emphasis on remote and space sensing for next-generation unilateral verification capabilities supporting strategic stability, including development of AI systems and tools, and provides upgrades to the low-yield nuclear monitoring (LYNM) testbed for its next series of experiments. The request also supports continued efforts to sustain and develop foundational nonproliferation technical capabilities by providing targeted, long-term support for enabling infrastructure, science and technology, and an expert workforce. Additionally, it continues to develop and maintain advanced technical nuclear

forensics analysis capabilities at the U.S. national laboratories that can support time-critical decisions in the event of a nuclear or radiological incident or assist in determining the origin of interdicted materials or nuclear devices.

Nonproliferation Construction - Nonproliferation Construction consolidates construction costs for DNN projects. Currently, one project that will support the dilute and dispose strategy for surplus plutonium disposition resides within the Material Management and Minimization program. The Surplus Plutonium Disposition (SPD) project will add additional glovebox capacity at the Savannah River Site to accelerate plutonium dilution and aid in the removal of plutonium from the state of South Carolina. The FY 2025 Budget Request supports completing the final design review and activities to request CD-2/3, *Approval of Performance Baseline and Start of Construction*, to initiate full construction on the SPD project.

Nuclear Counterterrorism and Incident Response Program (NCTIR)

- **Counterterrorism and Counterproliferation (CTCP)**
  The CTCP subprogram provides the Nation's technical capability to understand and defeat nuclear devices, including improvised nuclear devices (INDs) and lost or stolen foreign nuclear weapons. This knowledge in turn informs U.S. Government policies, regulations, and key Department of Defense (DoD) mission partners on terrorist and proliferant state nuclear threats and related contingency planning. In support of the nuclear counterterrorism mission, the FY 2025 Budget Request for NCTIR supports programs to manage and deploy the DOE/NNSA Nuclear Emergency Support Team (NEST), comprised of scientific and technical experts who are trained and equipped to respond rapidly to nuclear or radiological incidents and accidents worldwide. NEST includes nuclear forensics capabilities which support identifying the origin of nuclear material interdicted outside of regulatory control or used in a nuclear attack. CTCP will apply its unique scientific knowledge of nuclear threats to enable red reaming capabilities to better understand how artificial intelligence (AI) impacts the nuclear threat landscape. Additionally, CTCP builds international partner capacity to respond effectively to nuclear or radiological incidents in their countries. Finally, CTCP integrates DOE/NNSA policy, planning, and operations on counterproliferation priorities, supporting urgent needs, and proactively pursuing opportunities to prevent nuclear threats and develop technologies to apply to the counterproliferation mission.

- **Emergency Management (EM)**
  The EM subprogram provides the structure and processes to support a comprehensive and integrated approach to all-hazards emergency management. The EM subprogram improves the readiness and effectiveness of the DOE Emergency Management System and the Nuclear Security Enterprise on a programmatic and performance level to deal with all types of emergencies impacting the DOE/NNSA enterprise or its equities anywhere in the world. This promotes unity of effort and a culture of continuous improvement to safeguard the health and safety of workers and the public, protect the environment, and enhance the resilience of the Department and the Nation.

Naval Reactors

The FY 2025 Request supports continued safe and reliable operation of the Navy's nuclear-powered fleet (67 submarines, 11 aircraft carriers, and 5 research, development, and training platforms). The Program's development work consists of refining and improving existing technology to ensure that the U.S. Navy's nuclear propulsion plants are increasingly efficient and effective and will be capable of meeting future threats to national security. In addition to supporting the existing nuclear fleet, NR has two major DOE initiatives—the *Columbia*-Class Reactor System Development, and recapitalizing spent fuel handling and examination capabilities at the aging Expended Core Facility in Idaho.

The FY 2025 Request includes increases to support initiating the defueling of land-based reactor prototype, facility and systems maintenance and regulatory requirements across the Program's four DOE sites, environmental remediation, and necessary minor construction projects to recapitalize deteriorating infrastructure and equipment; as well as unique technologies used in naval reactors that are crucial to delivering superior navy fleet operations and dominance in the maritime domain. These increases are largely offset by reduced funding for S8G Prototype Refueling, Columbia-Class Reactor Systems Development, and Construction consistent with project profiles.

NNSA Federal Salaries and Expenses

The FY 2025 Request builds upon ongoing efforts to improve the effectiveness and efficiency of NNSA federal oversight and to meet current and future workforce needs. The growth in the FSE account will support 2,084 Federal Full-time Equivalents (FTEs), which is 220 FTE above the FY 2023 level. This total figure includes 85 FTE from DOE Environmental Management to the transfer of landlord responsibility for the Savannah River Site. The NNSA workforce is critical to the

success of the Nation's nuclear security enterprise. The right number of people, with the right skills, in the right positions is key to the growing mission including modernizing the nuclear deterrent, recapitalizing the aging infrastructure, and continuing to meet the requirements of nonproliferation and counterterrorism programs. NNSA will use a variety of innovative methods to grow and shape the professional staff including recruitment events and available excepted service hiring authority. The NNSA will also continue to monitor the evolving need for federal oversight in support of the nuclear modernization missions and adjust future staffing plans accordingly. NNSA will also use partnerships with academic alliances to grow the workforce with early identification and recruitment of top science, technology, engineering, and math talent.

Entry Level Hires: The NNSA supports a variety of programs to help train and recruit the next generation of leaders in managing the nuclear stockpile, nonproliferation, nuclear security, and international security, such as the NNSA Graduate Fellowship Program (NGFP), the Minority Serving Institutions Partnership Program (MSIPP), and the Presidential Management Fellows (PMF) program. These programs foster the pipeline of qualified professionals who will sustain expertise in these areas through future employment in the NNSA NSE.

DOE Working Capital Fund (WCF) Support

NNSA's Total FY 2025 Request includes $84,124,000 for NNSA's projected support to the DOE WCF. Of this amount, $38,868,000 will be paid out of FSE; $37,383,000 out of WA; $4,620,000 out of DNN; and $3,253,000 out of NR. This funding covers selected shared enterprise activities including managing enterprise-wide systems and data, telecommunications, and supporting the integrated acquisition environment.

Legacy Contractor Pensions and Settlement Payments

These budget lines included in the WA and DNN accounts include funding for the Requa settlement reached in 2019 as well as DOE's annual reimbursement made to the University of California (UC) Retirement Plan (UCRP) for former UC employees and annuitants who worked at the Lawrence Livermore National Laboratory (LLNL) and Los Alamos National Laboratory (LANL).

The *Requa* lawsuit involved UC employees of LLNL who retired prior to the Laboratory's transition to a new contractor on October 1, 2007. The retirees had been receiving health insurance through a UC health plan but when the LLNL contract transitioned to LLNS, the employees were offered health insurance through the new LLNL contractor, leading the retirees to file a lawsuit seeking reinstatement into the UC health plan. The parties settled the lawsuit in 2019, and a final judgment was issued in April 2020. DOE/NNSA agreed, pursuant to the legacy UC-LLNL Contract, to provide UC a portion of the total costs to settle the lawsuit, over a period of seven years through FY 2026. DOE/NNSA's responsibility for FY 2025 is $9,000,000.

These budget lines also continue to include DOE/NNSA's annual reimbursement made to the UCRP for former UC employees and annuitants who worked at the LLNL and LANL. The annual reimbursement is based on the actuarial valuation report and an annual assessment provided by UC and is covered by the terms described in the contracts. The Request includes a total of $37,762,000.

These requirements will be partially funded with prior year balances.

Site Estimates ($K)

Site	FY 2023 Enacted	FY 2024 Annualized	FY 2025 Request				
			FSE	WA	DNN	NR	Total
Argonne National Laboratory	67,791	65,229	1,200	5,207	54,990	-	61,397
Bettis Atomic Power Laboratory	621,328	621,328	-	-	-	599,711	599,711
Brookhaven National Laboratory	18,580	18,990	7	525	19,882	-	20,414
Carlsbad Area Office	1	1	1	-	-	-	1
Chicago Operations Office	7	7	7	-	-	-	7
Consolidated Business Center	310	313	-	-	318	-	318
Fermi National Accelerator Laboratory	750	775	-	-	848	-	848
Idaho National Laboratory	205,794	212,286	1	4,094	100,482	94,750	199,327
Kansas City Field Office	8,274	8,687	9,809	-	-	-	9,809
Kansas City National Security Complex	1,204,929	1,179,287	-	1,264,554	72,031	-	1,336,585
Knolls Atomic Power Laboratory	634,022	634,022	-	-	-	755,410	755,410
Lawrence Berkeley National Laboratory	21,478	20,460	-	2,658	21,278	-	23,936
Lawrence Livermore National Laboratory	2,224,290	2,263,702	1,100	2,126,667	264,702	-	2,392,469
Livermore Field Office	34,271	17,995	18,792	14,481	-	-	33,273
Los Alamos Field Office	21,669	21,681	23,320	25	-	-	23,345
Los Alamos National Laboratory	4,022,770	3,999,235	-	4,028,358	428,209	-	4,456,567
Naval Reactors Facility	651,183	651,183	-	-	-	587,254	587,254
Naval Reactors Laboratory Field Office	16,791	16,791	-	-	-	18,682	18,682
Naval Research Laboratory	9,300	6,878	-	1,600	-	-	1,600
NETL Pittsburgh	24,881	23,276	250	20,506	1,843	-	22,599
Nevada Field Office	20,184	20,733	19,609	1,532	557	-	21,698
Nevada National Security Site	674,221	664,356	3	715,820	126,866	-	842,689
NNSA Albuquerque Complex	1,513,655	1,557,387	600	753,456	180,535	-	934,591
NNSA Production Office (NPO)	54,516	57,426	34,211	-	-	-	34,211
Oak Ridge Institute for Science & Education	3,382	3,583	-	-	4,399	-	4,399
Oak Ridge National Laboratory	289,703	270,864	7	131,481	188,851	-	320,339
Oak Ridge Office	275	275	-	-	-	-	-
Office of Scientific & Technical Information	612	748	-	669	100	-	769
Pacific Northwest National Laboratory	444,097	350,186	-	105,079	270,626	-	375,705
Pantex Plant	1,062,327	1,041,629	-	1,113,383	14,848	-	1,128,231
Portsmouth Gaseous Diffusion Plant	60,000	60,400	-	46,100	-	-	46,100
Princeton Plasma Physics Laboratory	424	285	-	-	312	-	312
Richland Operations Office	1,923	1,829	7	-	2,206	-	2,213
Sandia Field Office	25,522	25,615	27,417	312	-	-	27,729
Sandia National Laboratories	2,854,983	2,832,661	-	2,833,922	322,835	-	3,156,757
Savannah River National Laboratory	173,932	157,781	99	102,514	61,524	-	164,137
Savannah River Operations Office	22,085	34,826	24,622	1,444	14,976	-	41,042
Savannah River Site	1,796,109	1,811,738	-	1,890,157	78,681	-	1,968,838
SLAC National Accelerator Laboratory	3,080	1,489	-	8,680	1,365	-	10,045
Thomas Jefferson National Accelerator Facilit	-	609	-	-	658	-	658
University of Rochester	86,100	86,641	-	92,648	-	-	92,648
Washington Headquarters	1,900,467	1,999,667	403,413	1,835,198	219,343	62,966	2,520,920
Waste Isolation Pilot Plant	16,484	17,619	-	-	16,095	-	16,095
Y-12 National Security Complex	1,905,916	1,937,943	-	2,747,574	62,748	-	2,810,322
Adjustments	(535,852)	(535,852)	-	-	(67,000)	-	(67,000)
Grand Total	**22,162,564**	**22,162,564**	**564,475**	**19,848,644**	**2,465,108**	**2,118,773**	**24,997,000**

[a] Contains only SRNL Operations & Maintenance funding.

Cybersecurity Details
National Institute of Science and Technology Category ($K)

NNSA prioritizes investments in cybersecurity and IT that fully support the NNSA mission across the enterprise and improve cybersecurity and IT performance, resiliency, and response. These investments align to the Administration's priorities for cybersecurity and technology modernization. The table below breaks out cybersecurity funding across NNSA by National Institute of Standards and Technology category.

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request
Detect	39,392	39,392	63,449
Naval Reactors	1,480	1,480	1,696
Weapons Activities	37,912	37,912	61,753
Identify	72,360	72,360	117,080
Naval Reactors	1,639	1,639	1,881
Weapons Activities	70,721	70,721	115,199
Protect	133,586	133,586	216,379
Naval Reactors	2,528	2,528	2,898
Weapons Activities	131,058	131,058	213,481
Recover	2,246	2,246	3,424
Naval Reactors	484	484	555
Weapons Activities	1,762	1,762	2,869
Respond	22,734	22,734	36,413
Naval Reactors	1,281	1,281	1,468
Weapons Activities	21,453	21,453	34,945
Total NNSA	270,318	270,318	436,745

Notification and Use of Minor Construction Authority

Authorities:
50 US Code 2743(b) requires an annual report on each exercise of minor construction authority. As a result of addressing all minor construction, this report also includes all project information requested in the FY 2018 National Defense Authorization Act.

Additionally, pursuant to 50 US Code 2743(d), this report notifies all minor construction projects, as indicated by checkmark, having a total estimated cost of more than $5 million planned for execution.

Finally, 50 US Code 2746(b) requires that if the total estimated cost for construction design in connection with any construction project exceeds $5,000,000, funds for that design must be specifically authorized by law. NNSA requests Congressional authorization for those minor construction projects, as indicated by checkmark, that are estimated to exceed the $5,000,000 design threshold.

Percent Complete:
NNSA developed the following standardized calculation for Percent Complete:
% Complete for Minor Construction (MC) = 100 * (total estimated cost (TEC) costed to date / TEC)

See **Abbreviations** list (end of document).

Icon Key:
⌛ **- Project starting its notification and wait period.**
📣 **- Provisional Notification – Project is planned to start within the budget request period. NNSA may accelerate or delay these projects to address emerging changes in priorities and unplanned infrastructure failures.**
🛠**- Fix reporting or notification. Usually, reclassifying previously characterized MIE (personal property), as MC (related personal property).**

			Icons		✓	✓			Original			Current							
					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
					✓		0%		FY 2025	FY 2025	FY 2026	FY 2025	FY 2025	FY 2026					
FSE	FSE	HQ	Portals Return	Headquarters (HQ) renovations to return from Portals			10,500	NA	10,500	500	0	0	0	500	10,000	0	0	0	0
FSE	**FSE**			**SUBTOTAL**			**NA**	**NA**	**NA**	**NA**	**NA**	**-**	**-**	**500**	**10,000**	**-**	**-**	**-**	**NA**
					NA	NA	NA		NA	NA	NA	NA	NA	NA					
WA	SM	NA	MC (TEC <$5M)	NA			NA	NA	NA	NA	NA	33,127	35,645	37,427	38,625	39,436	40,264	41,109	NA
							5%		FY 2023	FY 2023	FY 2024	FY 2024	FY 2024	FY 2025					
WA	SM	LLNL	Dynamic Test Lab	As originally notified			6,000	6,000	6,900	600	0	0	6,900	0	0	0	0	0	0
							10%		FY 2023	FY 2023	FY 2024	FY 2023	FY 2023	FY 2024					
WA	SM	LLNL	B341 ESD Lab	Modify B341 lab to optimize utilization for ESD team			4,400	4,400	6,100	500	0	6,100	0	0	0	0	0	0	0
							100%		NA	NA	FY 2022	NA	NA	FY 2023					
WA	SM	PX	12-44, Cell 8	As originally notified			8,000	8,000	8,000	1,000	8,000	0	0	0	0	0	0	0	0
							0%		NA	NA	FY 2026	FY 2024	FY 2025	FY 2026					
WA	SM	PX	12-64 Bays 11, 12 & 15 Replacement Facilities	As originally notified			5,283	5,283	5,283	1,300	0	0	1,300	3,983	0	0	0	0	0
							51%		FY 2021	FY 2022	FY 2023	FY 2021	FY 2023	FY 2024					
WA	SM	SNL	SNL CA High Security Office Modular Addition	As originally notified			7,800	14,500	14,500	800	13,500	1,000	0	0	0	0	0	0	0
							50%		FY 2020	FY 2022	FY 2023	FY 2020	FY 2024	FY 2026					
WA	SM	SRS	Mass Spec Replacement Project #1A: New Inert Mass Spec (New MS #5) 234-H Room 301	As originally notified			5,500	9,000	9,500	1,500	4,500	1,000	0	4,000	0	0	0	0	0
							71%		FY 2021	FY 2021	FY 2023	FY 2021	FY 2021	FY 2024					
WA	SM	Y-12	9990-03 Facility Upgrades	As originally notified			19,952	19,952	19,952	1,750	19,952	0	0	0	0	0	0	0	0

			Icons		✓	✓			Original			Current							
					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
							18%		FY 2021	FY 2023	FY 2025	FY 2022	FY 2024	FY 2025					
WA	SM	Y-12	Building 9201-1 Pangborn Upgrades	As originally notified			5,000	6,000	9,000	300	6,000	3,000	0	0	0	0	0	0	0
WA	**SM**			**SUBTOTAL**			**NA**	**NA**	**NA**	**NA**	**NA**	**44,227**	**43,845**	**45,410**	**38,625**	**39,436**	**40,264**	**41,109**	**NA**
					NA	NA	NA		NA	NA	NA	NA	NA	NA					
WA	PM	NA	MC (TEC <$5M)	NA			NA	NA	NA	NA	NA	38,818	41,768	43,857	45,260	46,210	47,181	48,172	NA
							35%		NA	NA	FY 2024	NA	NA	FY 2024					
WA	PM	LANL	Establish IT Production Infrastructure @ TA-55	As originally notified			6,500	6,500	6,500	500	4,500	2,000	0	0	0	0	0	0	0
							60%		FY 2021	FY 2021	FY 2024	FY 2021	FY 2023	FY 2024					
WA	PM	LANL	Increase Positive Personal Identity Verification (PPIV) Booth Capacity (East Entry Control Facility)	As originally notified			12,000	9,000	12,464	500	7,532	2,751	0	2,181	0	0	0	0	0
							0%		FY2025	FY2026	FY2028	FY2025	FY2026	FY2028					
WA	PM	LANL	Modifications to the Inert Gas System in PF-4	As originally notified			20,000	20,000	20,000	1,900	0	0	0	1,900	18,100	0	0	0	0
							10%		NA	NA	FY 2023	NA	NA	FY 2025					
WA	PM	LANL	PF-4 Relocated Vault Administrative Area	As originally notified			5,296	9,300	9,032	1,200	6,673	311	0	2,048	0	0	0	0	0
							0%		NA	NA	FY 2029	NA	NA	FY 2029					
WA	PM	LANL	Standards and Cal: Demo and Installation of a Mod Lab for Coordinate Measuring Machine	As originally notified			8,200	8,200	8,200	1,900	0	0	0	0	0	1,900	6,300	0	0
					✓	✓	0%		FY 2025	FY 2026	FY 2027	FY 2025	FY 2026	FY 2027					

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					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	PM	LANL	Pu 238 Water Bath Relocation	Relocation of the Pu 238 storage capability segregating of water cooled Pu 238 materials.			29,030	NA	29,030	6,585	0	0	0	6,585	22,445	0	0	0	0
							5%		FY 2023	FY 2023	FY 2024	FY 2023	FY 2024	FY 2025					
WA	PM	LLNL	DAF Glovebox Exhaust System for expanded glovebox operations	As originally notified			10,000	20,700	20,700	-	0	20,700	0	0	0	0	0	0	0
							0%		FY 2022	FY 2023	FY 2023	FY 2024	FY 2024	FY 2025					
WA	PM	LLNL	Quench furnace infrastructure and space buildout	As originally notified			10,500	10,500	5,000	500	0	0	5,000	0	0	0	0	0	0
							0%		NA	NA	FY 2026	FY 2026	FY 2026	FY 2027					
WA	PM	NNSS	Certified Packaging Center Replacement	As originally notified			5,000	5,000	16,700	2,000	0	0	0	0	16,700	0	0	0	0
							50%		NA	NA	FY 2022	FY 2023	FY 2024	FY 2024					
WA	PM	NNSS	DAF Deployment Project	As originally notified			6,378	8,525	8,125	430	4,125	0	4,000	0	0	0	0	0	0
					✓		0%		FY 2024	FY 2024	FY 2025	FY 2024	FY 2024	FY 2025					
WA	PM	NNSS	DAF Mission Capabilities	Upgrade the current electrical capacity and/or unclassified communications in 13 buildings within the DAF			5,700	5,700	5,700	1,500	0	0	1,500	4,200	0	0	0	0	0
					✓		0%		FY 2025	FY 2026	FY 2027	FY 2025	FY 2026	FY 2027					
WA	PM	NNSS	DAF New Fire Water Storage Tank	Replace the credited fire water storage tank that is currently past its useful service life with a new, seismically qualified, Safety Significant water storage tank that meets all DSA requirements.			25,000	NA	25,000	3,000	0	0	0	25,000	0	0	0	0	0

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
							25%		FY 2021	FY 2022	FY 2025	FY 2021	FY 2022	FY 2025					
WA	PM	NNSS	ECSE Test Stand Capabilities	As originally notified			1,500	1,500	5,023	1,089	5,023	0	0	0	0	0	0	0	0
					✓		85%		FY 2021	FY 2022	FY 2023	FY 2021	FY 2024	FY 2025					
WA	PM	ORNL	Demonstration Cascade 2 (DCAS2) and associated 6010 Manufacturing Capacity Vault Type Room (VTR)	2 floor, ~7000 sq ft concrete addition to existing research facility at ORNL main campus (Building 6010), Modify Building 6010 for manufacturing capacity required to facilitate Demonstration Cascade 2 Operation, including conversion to VTR.			19,000	19,000	22,500	1,390	15,000	7,500	0	0	0	0	0	0	0
					✓		0%		NA	NA	FY 2025	FY 2025	FY 2025	FY 2027					
WA	PM	PNNL	325 RPL (Radiochemical Processing Laboratory) Analytical and On-Line Monitoring Laboratory Upgrade	As originally notified			9,200	9,200	9,200	700	0	0	0	9,200	0	0	0	0	0
							6%		FY 2023	FY 2023	FY 2025	FY 2023	FY 2024	FY 2025					
WA	PM	PNNL	325 RPL (Radiochemical Processing Laboratory) Building Systems Upgrade (previously Electrical Upgrade)	As originally notified			17,250	17,250	17,654	2,200	0	17,654	0	0	0	0	0	0	0
					✓		0%		FY 2023	FY 2023	FY 2025	FY 2028	FY 2028	FY 2031					
WA	PM	PNNL	325 RPL (Radiochemical Processing Laboratory) Hot Cell Renovation	As originally notified			23,100	23,100	23,100	2,000	0	0	0	0	0	0	2,000	21,100	0
							0%		FY 2023	FY 2023	FY 2025	FY 2023	FY 2024	FY 2026					

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			Icons		✓	✓														
					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	PM	PNNL	325 RPL (Radiochemical Processing Laboratory) Plutonium Metal Glovebox Laboratory Upgrade	As originally notified			11,100	11,100	9,958	700	0	9,958	0	0	0	0	0	0	0
					✓	-	0%		FY 2026	FY 2026	FY 2028	FY 2026	FY 2026	FY 2028					
WA	PM	PNNL	325 RPL (Radiochemical Processing Laboratory) Steam to Hydronics Conversion	Steam boilers will be replaced with new hydronic system heat source. New hydronic piping will be fed to the building.			6,700	NA	6,700	200	0	0	0	0	6,700	0	0	0	0
							15%		NA	NA	FY 2025	NA	NA	FY 2025					
WA	PM	PX	Heat Treat Oven	As originally notified			2,960	2,960	5,839	1,000	1,300	4,539	0	0	0	0	0	0	0
							51%		FY 2019	FY 2019	FY 2020	FY 2021	FY 2022	FY 2024					
WA	PM	SNL	Reliable Dry Room Installation and Li Battery Pack Rapid Prototyping Lab Installation	As originally notified			12,000	18,100	18,100	1,100	18,100	0	0	0	0	0	0	0	0
							10%		NA	NA	FY 2025	NA	FY 2024	FY 2025					
WA	PM	SRS	Glovebox Stripper Blower Redesign/Replacement	As originally notified			7,000	7,000	7,000	2,000	0	2,000	5,000	0	0	0	0	0	0
							20%		NA	NA	FY 2024	NA	NA	FY 2024					
WA	PM	SRS	Install HT-TCAP Feed/Product Transfer Lines	As originally notified			6,000	6,000	6,765	500	1,198	5,567	0	0	0	0	0	0	0
					✓	✓	0%		FY 2022	FY 2023	FY 2027	FY 2027	FY 2028	FY 2030					
WA	PM	SRS	Install Mini-TCAP in TEF	As originally notified			15,645	15,645	15,645	5,000	0	0	0	0	0	15,645	0	0	0
							0%		NA	NA	FY 2028	NA	FY 2025	FY 2026					

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	PM	SRS	Module Stripper Blower Redesign/Replacement	As originally notified			7,750	7,000	7,000	2,000	0	0	2,000	5,000	0	0	0	0	0
							7%		NA	NA	FY 2024	FY 2022	FY 2024	FY2025					
WA	PM	SRS	Redesign TEF Mass Spec 4 Location and purchase new Mass Spec for TEF	As originally notified			8,600	6,300	6,300	2,100	1,056	5,244	0	0	0	0	0	0	0
					✓	-	0%		FY 2029	FY 2030	FY 2032	FY 2029	FY 2030	FY 2032					
WA	PM	SRS	Restoration of P-EVAC (Hydride Beds and HCN valves)	Upgrade P-EVAC beds and associated valves			13,000	NA	13,000	-	0	0	0	0	0	0	0	13,000	0
							0%		FY 2027	FY 2027	FY 2034	FY 2029	FY 2033	FY 2034					
WA	PM	SRS	TEF Classified D/3 DCS to Delta V DCS Conversion	As originally notified			26,000	26,000	26,000	5,000	0	0	0	0	0	0	0	26,000	0
					✓	-	0%		FY 2029	FY 2030	FY 2032	FY 2029	FY 2030	FY 2032					
WA	PM	SRS	TEF Seismic Tritium Confinement System (STCS) Design	Add Tritium Containment for Siesmic event in TEF facility			11,000	NA	11,000	3,000	0	0	0	0	0	0	0	11,000	0
							0%		NA	NA	FY 2029	FY 2030	FY 2031	FY 2032					
WA	PM	SRS	TEF Z-Bed Recovery Piping Replacement	As originally notified			5,000	5,000	5,000	1,000	0	0	0	0	0	0	0	0	5,000
					✓	-	0%		FY 2025	FY 2026	FY 2028	FY 2025	FY 2026	FY 2028					
WA	PM	SRS	Upgrade Diffuser System	Replace/ Reconfiqure Diffuser stages, flow beds, Product Bed C			9,000	NA	9,000	0	0	0	0	0	9,000	0	0	0	0
							0%		FY 2027	FY 2027	FY 2029	FY 2027	FY 2028	FY 2029					
WA	PM	SRS	Upgrade Existing Seismic Tritium Confinement System (STCS) Components to Safety Class- Hydride Beds & Mix Tanks	As originally notified			10,000	10,000	14,000	3,000	0	0	0	0	0	14,000	0	0	0
							0%		FY 2023	FY 2024	FY 2025	FY 2028	FY 2029	FY 2030					

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	PM	SRS	Waste Container Handling Area	As originally notified			11,262	15,000	14,995	3,697	0	0	0	0	0	0	3,697	11,298	0
							0%		NA	NA	FY 2030	FY 2030	FY 2031	FY 2032					
WA	PM	SRS	Worker Protection System (WPS) Programmable Logic Controller (PLC) to Delta V Conversion	As originally notified			6,250	5,750	5,750	750	0	0	0	0	0	0	0	0	5,750
							0%		FY 2024	FY 2025	FY 2025	FY 2024	FY 2025	FY 2026					
WA	PM	Y-12	9204-2E Liquid Transfer Station	As originally notified			7,000	7,000	13,700	1,000	300	6,700	0	6,700	0	0	0	0	0
							46%		FY 2019	NA	FY 2024	FY 2019	NA	FY 2025					
WA	PM	Y-12	9212 Decon/Sorting and Segmenting Facility	As originally notified			9,600	7,958	10,700	0	5,999	4,701	0	0	0	0	0	0	0
							0%		FY 2024	FY 2025	FY 2025	FY 2024	FY 2025	FY 2026					
WA	PM	Y-12	9215 Demo & Modification of High Bay Rack Area	As originally notified			7,500	7,500	11,300	1,680	0	0	1,680	9,620	0	0	0	0	0
							0%		FY 2024	FY 2024	FY 2025	FY 2024	FY 2024	FY 2026					
WA	PM	Y-12	9215 Dock Modification	As originally notified			5,500	5,500	5,500	1,000	0	0	1,000	4,500	0	0	0	0	0
							0%		FY 2024	FY 2025	FY 2025	FY 2024	FY 2025	FY 2026					
WA	PM	Y-12	9215 Liquid Transfer Station	As originally notified			7,000	7,000	13,700	1,000	300	6,700	0	6,700	0	0	0	0	0
							0%		FY 2024	FY 2024	FY 2025	FY 2024	FY 2024	FY 2026					
WA	PM	Y-12	9995 Dock 12 Modifications	As originally notified			5,500	5,500	5,500	1,000	0	0	1,000	4,500	0	0	0	0	0
							0%		FY 2024	FY 2025	FY 2025	FY 2024	FY 2025	FY 2026					
WA	PM	Y-12	9995 Liquid Transfer Station	As originally notified			7,000	7,000	13,700	1,000	300	6,700	0	6,700	0	0	0	0	0
							0%		NA	NA	FY 2025	FY 2024	FY 2024	FY 2026					
WA	PM	Y-12	9995 Uranium Area Room 152	As originally notified			7,900	7,900	7,900	0	0	0	7,900	0	0	0	0	0	0
							0%		NA	NA	FY 2025	FY 2024	FY 2024	FY 2026					

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	PM	Y-12	9995 Uranium Area Room 153	As originally notified			9,300	9,300	9,300	0	0	0	9,300	0	0	0	0	0	0
							0%		NA	NA	FY 2025	FY 2026	FY 2026	FY 2027					
WA	PM	Y-12	9995 Uranium Area Room 154	As originally notified			7,800	7,800	7,800	0	0	0	0	0	7,800	0	0	0	0
							0%		FY 2024	FY 2025	FY 2026	FY 2026	FY 2026	FY 2028					
WA	PM	Y-12	9995 Uranium Area Room 158	As originally notified			15,800	15,800	15,800	1,500	0	0	0	0	1,500	14,300	0	0	0
							0%		FY 2024	FY 2024	FY 2026	FY 2024	FY 2024	FY 2026					
WA	PM	Y-12	Bldg. 9215 UCl3 Stand-Alone Reactor Assoc Constr	As originally notified			20,000	20,000	20,000	0	0	0	20,000	0	0	0	0	0	0
							0%		NA	NA	FY 2025	FY 2024	FY 2025	FY 2026					
WA	PM	Y-12	Depleted and Binary Auxiliary Lab Assoc Construction	As originally notified			9,500	9,500	28,500	2,500	0	0	2,500	26,000	0	0	0	0	0
							0%		FY 2025	FY 2025	FY 2027	FY 2025	FY 2025	FY 2027					
WA	PM	Y-12	Depleted Uranium Lab for 9995	As originally notified			24,000	24,000	28,500	2,500	0	0	0	2,500	26,000	0	0	0	0
							0%		FY 2024	NA	FY 2025	FY 2025	NA	FY 2026					
WA	PM	Y-12	DUM 9215 Tower Water Execution	As originally notified			5,000	5,000	5,000	2,000	0	0	0	5,000	0	0	0	0	0
					✓	-	0%		FY 2025	FY 2025	FY 2027	FY 2025	FY 2025	FY 2027					
WA	PM	Y-12	DUM Foundry 2nd (VAR) Assoc Construction	Facility modifications to accommodate 2nd VAR MIE			7,000	NA	7,000	1,000	0	0	0	7,000	0	0	0	0	0
							0%		FY 2025	FY 2025	FY 2027	FY 2025	FY 2025	FY 2027					
WA	PM	Y-12	DUM Rolling 9215 Stack 11 Replacement (formerly Stock 11 Replacement)	As originally notified			15,000	15,000	15,000	2,000	0	0	0	2,000	13,000	0	0	0	0
							0%		FY 2025	FY 2026	FY 2026	FY 2025	FY 2026	FY 2027					
WA	PM	Y-12	Drying Oven #3	As originally notified			5,200	5,200	8,500	1,500	0	1,500	0	7,000	0	0	0	0	0
					✓	-	0%		FY 2025	FY 2025	FY 2027	FY 2025	FY 2025	FY 2027					

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	PM	Y-12	GMM 9201-01 Can Anneal Furn Assoc Construction	Facility modifications to accommodate Can Annealing Vac Furnace.			5,000	NA	5,000	500	0	0	0	500	4,500	0	0	0	0
							0%		FY 2025	FY 2025	FY 2027	FY 2024	FY 2025	FY 2027					
WA	PM	Y-12	Special Materials and Lithium Lab Replacement for 9995 (formerly Enriched Uranium Lab Replacement for 9995)	As originally notified			24,500	24,500	28,200	2,600	0	0	2,600	25,600	0	0	0	0	0
							0%		FY 2023	FY 2023	FY 2026	FY 2025	FY 2025	FY 2026					
WA	PM	Y-12	LiM 9204-2 Redundant Crusher Grinder Installation	As originally notified			11,000	11,000	11,000	0	0	11,000	0	0	0	0	0	0	0
							0%		FY 2024	NA	FY 2025	FY 2024	NA	FY 2026					
WA	PM	Y-12	UM Bldg 9204-2E Sample Capability Assoc Constr	As originally notified			6,500	6,500	6,500	0	0	0	6,500	0	0	0	0	0	0
WA	**PM**			**SUBTOTAL**			**NA**	**NA**	**NA**	**NA**	**NA**	**154,343**	**120,048**	**214,291**	**180,655**	**102,055**	**69,078**	**130,570**	**NA**
					NA	NA	NA		NA	NA	NA	NA	NA	NA					
WA	SRT&E	NA	MC (TEC <$5M)	NA			NA	NA	NA	NA	NA	30,807	33,148	34,806	35,920	36,674	37,444	38,230	NA
							20%		FY 2022	FY 2022	FY 2024	FY 2022	FY 2022	FY 2026					
WA	SRT&E	LANL	SCC Electrical Upgrades	As originally notified			15,000	18,400	18,400	1,135	18,400	0	0	0	0	0	0	0	0
					✓		0%		FY 2025	FY 2025	FY 2026	FY 2025	FY 2025	FY 2026					
WA	SRT&E	LANL	ATS-5 Installation Project	Combination of ATS-5 Cooling Installation and ATS-5 Electrical Installation projects			30,000	30,000	30,000	1,000	0	0	0	1,000	29,000	0	0	0	0
					✓		0%		FY 2028	FY 2028	FY 2028	FY 2028	FY 2028	FY 2028					

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	SRT&E	LANL	CTS-3 Installation	To provide the necessary infrastructure to operate HPC platforms that will provide the nuclear weapons complex mission-required computing cycles.			5,000	NA	5,000	0	0	0	0	0	0	0	5,000	0	0
							25%		FY 2023	FY 2023	FY 2026	FY 2024	FY 2025	FY 2027					
WA	SRT&E	LLNL	3w Power Sensors	As originally notified			19,900	19,900	19,900	5,000	0	0	5,000	14,900	0	0	0	0	0
							100%		FY 2021	FY 2022	FY 2023	FY 2021	FY 2022	FY 2023					
WA	SRT&E	LLNL	B453 El Capitan Site Infrastructure	As originally notified			18,000	18,000	13,504	1,200	13,504	0	0	0	0	0	0	0	0
							0%		FY 2024	FY 2024	FY 2026	FY2024	FY 2025	FY 2028					
WA	SRT&E	LLNL	Beam Blockers	As originally notified			28,000	28,000	28,000	7,000	0	0	7,000	21,000	0	0	0	0	0
					✓		0%		FY 2025	FY 2025	FY 2026	FY 2025	FY 2025	FY 2026					
WA	SRT&E	LLNL	Bldg 451 Power and Cooling Improvements/Modifications	Modify/improve power and cooling in B451 for high performance computing capabilities			7,500	NA	7,500	750	0	0	0	750	6,750				
					✓		0%		FY 2025	FY 2025	FY 2026	FY 2025	FY 2025	FY 2026					
WA	SRT&E	LLNL	Bldg 453 Power and Cooling Improvements/Modifications	Modify/improve power and cooling in B453 for high performance computing capabilities			7,500	NA	7,500	750	0	0	0	750	6,750				
							0%		FY 2024	FY 2024	FY 2025	FY 2025	FY 2025	FY 2026					
WA	SRT&E	LLNL	Bldg 453 Sierra Retirement	As originally notified			10,000	10,000	10,000	1,000	0	0	0	10,000	0	0	0	0	0
							1%		FY 2023	FY 2023	FY 2026	FY 2023	FY 2025	FY 2028					
WA	SRT&E	LLNL	Blue Blockers	As originally notified			18,400	18,400	18,400	2,300	0	2,300	0	16,100	0	0	0	0	0
							67%		NA	NA	FY 2023	NA	NA	FY 2024					

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WA	SRT&E	LLNL	High Fidelity Pulse Shaping (previously NIF Master Oscillator Recapitalization)	As originally notified			9,025	9,025	9,025	0	9,025	0	0	0	0	0	0	0	0
					✓		0%		FY 2025	FY 2026	FY 2029	FY 2025	FY 2026	FY 2029					
WA	SRT&E	LLNL	Multi-Pass Amplifier (MPA) Gain Stability	Design and implement 24 replacement of multi-pass amplifier systems based on current diode-pumped equivalent technology.			24,000	NA	24,000	4,000	0	0	0	4,000	20,000	0	0	0	0
							0%		NA	NA	FY 2026	FY 2025	NA	FY 2027					
WA	SRT&E	LLNL	Neutron Imaging System - Polar (previously NIS Equator 90-213)	As originally notified			6,700	6,700	6,700	0	0	0	0	6,700	0	0	0	0	0
							0%		NA	NA	FY 2025	NA	NA	FY 2026					
WA	SRT&E	LLNL	NIF High Resolution, neutron-hardened VISAR	As originally notified			7,230	7,230	7,230	1,700	0	0	0	0	7,230	0	0	0	0
					✓		0%		FY 2025	FY 2026	FY 2028	FY 2025	FY 2026	FY 2028					
WA	SRT&E	LLNL	Vacuum Enclosed Phase Plates	Design and commission a vacuum compatible CPP loop case in Bldg. 581			5,900	NA	5,900	2,700	0	0	0	2,700	3,200	0	0	0	0
							10%		FY 2020	FY 2021	FY 2022	FY 2021	FY 2023	FY 2026					
WA	SRT&E	NNSS	Z-Pinch Experimental Underground System (ZEUS) Test Bed Facility Improvements (ZTBFI) (previously U1a.03 Test Bed Facility Improvements)[a]	As originally notified			16,000	122,946	122,946	4,692	31,490	12,956	78,500	0	0	0	0	0	0
							60%		NA	NA	FY 2022	FY 2022	FY 2022	FY 2024					

[a] This project is proposed to be converted to a Line-Item Construction project in the FY 2024 budget and will be removed from MC reporting once funded. $7,000K of FY 2022 funding carryover was obligated in FY 2023.

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	SRT&E	SNL	4MW Power Upgrade for 725 HPC Facility	As originally notified			5,500	8,000	5,600	500	5,000	600	0	0	0	0	0	0	0
							6%		NA	NA	FY 2024	FY 2023	FY 2023	FY 2025					
WA	SRT&E	SNL	725E Cooling Capacity Expansion	As originally notified			9,500	9,600	13,600	100	100	13,500	0	0	0	0	0	0	0
WA	**SRT&E**			**SUBTOTAL**			**NA**	**NA**	**NA**	**NA**	**NA**	**60,163**	**125,348**	**112,706**	**108,850**	**36,674**	**42,444**	**38,230**	**NA**
					NA	NA	NA		NA	NA	NA	NA	NA	NA					
WA	I&O	NA	MC (TEC <$5M)	NA			NA	NA	NA	NA	NA	32,070	9,900	18,294	0	0	0	0	NA
							5%		FY 2023	FY 2024	FY 2025	FY 2023	FY 2024	FY 2026					
WA	I&O	KCNSC	Building 23 Advanced and Exploratory Technologies Area Buildout	As originally notified			18,165	22,434	22,434	1,857	0	1,857	20,577	0	0	0	0	0	0
							100%		FY 2021	FY 2021	FY 2022	FY 2021	FY 2022	FY 2023					
WA	I&O	KCNSC	Building 23 Classified Space Conversion & Electrical Testing, Weld Lab, and Mechanical Assembly Buildout Portfolio	As originally notified			13,440	19,119	19,431	1,272	19,431	0	0	0	0	0	0	0	0

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
							0%		FY 2024	FY 2024	FY 2026	FY 2024	FY 2024	FY 2027					
WA	I&O	KCNSC	Building 23 North Additive Manufacturing Expansion Buildout	As originally notified			16,022	16,022	14,562	1,460	0	0	1,460	13,102	0	0	0	0	0
							6%		FY 2023	FY 2024	FY 2026	FY 2023	FY 2024	FY 2026					
WA	I&O	KCNSC	Building 23 North Classification Upgrade	As originally notified			6,935	6,935	6,935	696	0	6,935	0	0	0	0	0	0	0
							4%		FY 2023	FY 2023	FY 2024	FY 2023	FY 2024	FY 2026					
WA	I&O	KCNSC	Building 23 North Expansion Infrastructure Upgrades	As originally notified			18,243	22,678	22,678	1,868	3,000	1,868	17,810	0	0	0	0	0	0
							0%		FY 2024	FY 2024	FY 2026	FY 2024	FY 2024	FY 2026					
WA	I&O	KCNSC	Building 23 North Manufacturing Support Buildout	As originally notified			12,924	12,924	11,865	1,059	0	0	1,059	10,806	0	0	0	0	0
							0%		FY 2024	FY 2024	FY 2026	FY 2024	FY 2024	FY 2026					
WA	I&O	KCNSC	Building 23 North Non-Destructive Testing & Environmental Lab Buildout	As originally notified			15,959	15,959	15,959	1,310	0	0	1,310	14,649	0	0	0	0	0
							0%		FY 2024	FY 2024	FY 2026	FY 2024	FY 2024	FY 2026					
WA	I&O	KCNSC	Building 23 North Surveillance Production Activities Expansion Buildout	As originally notified			14,350	14,350	14,350	1,436	0	0	1,436	12,914	0	0	0	0	0
							100%		FY 2021	FY 2021	FY 2022	FY 2021	FY 2022	FY 2023					
WA	I&O	KCNSC	Building 23 Tool Room & Model Shop Machining Operations Area Expansion Buildout (formerly Building 23 Tool Room & Model Shop Machining Revitalization)	As originally notified			12,694	10,042	10,042	1,269	10,042	0	0	0	0	0	0	0	0

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
							100%		FY 2021	FY 2021	FY 2023	FY 2021	FY 2022	FY 2024					
WA	I&O	KCNSC	Building 23 W80-4 Manufacturing Development Area Buildout	As originally notified			14,700	18,242	18,242	1,470	18,242	0	0	0	0	0	0	0	0
							18%		FY 2022	FY 2022	FY 2023	FY 2022	FY 2023	FY 2025					
WA	I&O	KCNSC	Building 23 W87-1 Manufacturing Development Area Buildout	As originally notified			13,006	20,410	20,410	1,355	13,006	7,404	0	0	0	0	0	0	0
							85%		NA	NA	FY 2023	FY2021	FY2021	FY 2024					
WA	I&O	KCNSC	New Maintenance Operations Office Facility	As originally notified			Below $5M	6,376	6,376	375	6,376	0	0	0	0	0	0	0	0
							100%		NA	NA	FY 2022	FY2020	FY2021	FY 2023					
WA	I&O	KCNSC	New Surface Parking Lot	As originally notified			Below $5M	5,287	5,287	375	5,287	0	0	0	0	0	0	0	0
					✓		0%		FY 2024	FY 2025	FY 2027	FY 2024	FY 2025	FY 2027					
	I&O	LFO	Building 311 HVAC Upgrade	Replace portions of the existing Building 311 HVAC system, its associated ductwork and piping with a more efficient and sustainable system; addressing any non-compliant HVAC requirements.			13,700	13,700	13,700	770	0	0	770	12,930					
							100%		NA	NA	FY 2024	FY 2022	FY 2022	FY 2024					
WA	I&O	LLNL	Building 132N Variable Air Control Replacement (previously Building 132N Defense Programs Research Variable Air Control Replacement)	As originally notified			6,500	6,500	6,500	325	6,500	0	0	0	0	0	0	0	0
							10%		NA	NA	FY 2026	FY 2023	FY 2023	FY 2026					

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	I&O	LLNL	Building 133 Heating Hot Water System Upgrade	As originally notified			7,950	7,950	7,950	650	0	7,950	0	0	0	0	0	0	0
							12%		FY 2023	FY 2024	FY 2025	FY 2023	FY 2023	FY 2025					
WA	I&O	LLNL	Building 151 Nuclear and Radiochemistry Facility Dissolver Laboratory Suite Upgrade	As originally notified			12,400	12,400	13,200	585	800	12,400	0	0	0	0	0	0	0
							3%		NA	NA	FY 2026	FY 2023	FY 2024	FY 2026					
WA	I&O	LLNL	Building 190 CAMS SF6 Transfer Station Upgrade Bldg	As originally notified			5,800	5,800	5,800	425	0	5,800	0	0	0	0	0	0	0
							81%		FY 2022	FY 2022	FY 2023	FY 2021	FY 2022	FY 2024					
WA	I&O	LLNL	Building 191 HEAF Atrium Conversion to Shot-Ready Workspace	As originally notified			12,300	12,300	12,300	1,062	12,300	0	0	0	0	0	0	0	0
							93%		FY 2021	FY 2021	FY 2023	FY 2021	FY 2022	FY 2024					
WA	I&O	LLNL	Building 321A Radiological & Material Characterization Capabilities Revitalization	As originally notified			11,500	17,185	17,185	1,500	17,185	0	0	0	0	0	0	0	0
							48%		FY 2022	FY 2023	FY 2025	FY 2022	FY 2023	FY 2025					
WA	I&O	LLNL	Building 331 Tritium Delivery System Upgrade	As originally notified			19,450	19,450	19,450	1,650	19,450	0	0	0	0	0	0	0	0
							17%		FY 2023	FY 2024	FY 2026	FY 2023	FY 2024	FY 2025					
WA	I&O	LLNL	Building 391 Optics and Materials Science Clean room Conversion	As originally notified			19,000	19,000	19,000	1,400	0	5,000	14,000	0	0	0	0	0	0

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
					✓		0%		FY 2025	FY 2026	FY 2027	FY 2025	FY 2026	FY 2027					
WA	I&O	LLNL	Building 411 Shipping and Receiving Seismic Upgrade	71,000 gsf building built in 1956 is the central shipping/receiving facility for LLNL. This seismic retrofit requires the strengthening and proper anchoring of the roof deck which includes demolishing and replacing the roofing materials and seismic bracing of the foundation.			19,220	NA	19,220	915	0	0	0	915	18,305	0	0	0	0
							61%		FY 2022	FY 2022	FY 2024	FY 2021	FY 2022	FY 2024					
WA	I&O	LLNL	Building 654 Stockpile Science Computing Facility Expansion (previously B654 Expansion)	As originally notified			18,000	20,350	20,350	600	20,350	0	0	0	0	0	0	0	0
							10%		NA	NA	FY 2026	FY 2023	FY 2024	FY 2025					
WA	I&O	LLNL	Building 850 Upgrade	As originally notified			7,000	7,000	7,000	400	0	7,000	0	0	0	0	0	0	0

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
					✓		0%		FY 2025	FY 2025	FY 2027	FY 2025	FY 2025	FY 2027					
WA	I&O	LLNL	New Building 296 Energetic Materials Office Facility (STAR)	Construct a 22,000 square foot office facility at Site 200 at LLNL. The building will re-use the existing B224 (STAR) design. The new space will consist of approximately 100 offices, several conference rooms, a break room/kitchen, and support space for mechanical, electrical, and fire protection. This building will house engineers and scientists working in the core Weapons program.			27,875	NA	27,875	925	0	0	0	27,875	0	0	0	0	0
					✓		0%		FY 2025	FY 2026	FY 2027	FY 2025	FY 2026	FY 2027					
WA	I&O	LLNL	New Building 420 Maintenance Shops Facility	The proposed STAR buildings (B420 and B421) will replace seismically deficient B511 (and B405 and B516) with half of the footprint in modern, seismically safe buildings efficiently delivered using the STAR model and an enclave approach.			28,320	NA	28,320	1,100	0	0	0	1,100	27,220	0	0	0	0

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
							89%		FY 2021	FY 2021	FY 2023	FY 2021	FY 2022	FY 2024					
WA	I&O	LLNL	New Design & Certification Science Support Office Facility Building 449 (STAR) (previously New Building 266 Design & Certification Science Support Office Facility)	As originally notified			17,800	22,200	22,200	400	22,200	0	0	0	0	0	0	0	0
							88%		FY 2022	FY 2022	FY 2023	FY 2022	FY 2022	FY 2024					
WA	I&O	LLNL	New Experimental Science Office Facility Building 266 (STAR)	As originally notified			19,400	22,200	22,200	900	22,200	0	0	0	0	0	0	0	0
							86%		FY 2021	FY 2021	FY 2023	FY 2021	FY 2021	FY 2024					
WA	I&O	LLNL	New Joining Capabilities & Vapor Deposition Facility Building 226 (STAR) (formerly New Building 226 Joining Capabilities and Vapor Deposition Facility (STAR))	As originally notified			19,700	19,700	19,700	200	19,700	0	0	0	0	0	0	0	0
							53%		FY 2023	FY 2023	FY 2025	FY 2022	FY 2023	FY 2024					
WA	I&O	LLNL	New LEP Warehouse Building 143 (previously New Site 200 Weapon Activity Warehouse)	As originally notified			13,950	13,950	13,950	825	13,950	0	0	0	0	0	0	0	0
							100%		FY 2020	FY 2020	FY 2022	FY 2020	FY 2021	FY 2023					
WA	I&O	LLNL	New Nondestructive Evaluation Building 310	As originally notified			15,000	17,100	17,100	1,500	17,100	0	0	0	0	0	0	0	0
							100%		FY 2021	FY 2021	FY 2023	FY 2020	FY 2021	FY 2024					

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	I&O	LLNL	New Stockpile LEP Office Building 144 (STAR) (formerly New Weapons LEP Office Building)	As originally notified			17,940	20,400	19,600	1,790	19,600	0	0	0	0	0	0	0	0
							14%		FY 2023	FY 2024	FY 2025	FY 2023	FY 2024	FY 2025					
WA	I&O	LLNL	Site 200 Electrical Utility Re-distribution System Capacity Upgrade	As originally notified			15,025	15,025	15,025	245	0	15,025	0	0	0	0	0	0	0
							0%		FY 2024	FY 2025	FY 2026	FY 2026	FY 2027	FY 2030					
WA	I&O	LLNL	Site 200 U791 and U792 Electrical Utility Substation Upgrade	As originally notified			22,850	22,850	24,905	1,444	0	0	0	0	1,444	23,461	0	0	0
							14%		FY 2022	FY 2022	FY 2024	FY 2022	FY 2023	FY 2025					
WA	I&O	LLNL	Site 300 - Zone 3 Water System Upgrades (previously Site 300 Water Supply Piping & Valve Zone 3 & Other Upgrades)	As originally notified			11,000	11,000	11,350	400	11,350	0	0	0	0	0	0	0	0
							2%		FY 2024	FY 2025	FY 2026	FY 2023	FY 2024	FY 2025					
WA	I&O	LLNL	U193 Site 200 Sewer Diversion Plant Facility Upgrade	As originally notified			16,375	16,375	16,575	1,200	200	16,375	0	0	0	0	0	0	0
							0%		FY 2024	FY 2024	FY 2025	FY 2024	FY 2025	FY 2026					
WA	I&O	LLNL	U291 Cooling Tower Upgrade	As originally notified			24,000	24,000	24,000	1,350	0	0	5,850	18,150	0	0	0	0	0
							99%		NA	NA	FY 2023	FY 2017	FY 2019	FY 2024					
WA	I&O	LAFO	East Jemez Rd./NM State Rd. 4 Intersection Reconfiguration	As originally notified			Below $5M	9,075	9,427	575	6,252	3,175	0	0	0	0	0	0	0
							44%		FY 2022	FY 2022	FY 2022	FY 2021	FY 2022	FY 2024					
WA	I&O	LANL	PF-4 High Pressure Water Supply Feed Separation	As originally notified			10,277	11,327	11,327	1,259	11,327	0	0	0	0	0	0	0	0

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
							99%		FY 2020	FY 2020	FY 2021	FY 2020	FY 2021	FY 2024					
WA	I&O	LANL	PF-4 Power and Communications Systems Upgrade	As originally notified			16,000	16,000	21,489	5,287	19,640	1,849	0	0	0	0	0	0	0
							5%		FY 2022	FY 2023	FY 2025	FY 2022	FY 2024	FY 2027					
WA	I&O	LANL	New TA-03 Weapons Archive Records Facility (WARF)	As originally notified			16,600	16,600	16,600	3,563	3,563	0	0	0	13,037	0	0	0	0
							8%		FY 2022	FY 2023	FY 2023	FY 2021	FY 2022	FY 2026					
WA	I&O	LANL	New TA-15 DARHT Hydro Vessel Repair Facility	As originally notified			16,491	16,491	34,000	2,800	34,000	0	0	0	0	0	0	0	0
							7%		FY 2021	FY 2022	FY 2023	FY 2021	FY 2022	FY 2025					
WA	I&O	LANL	New TA-15 Flight Instrumentation Test Laboratory (FITL) (STAR)	As originally notified			19,472	19,472	34,000	1,900	33,089	911	0	0	0	0	0	0	0
							52%		FY 2021	FY 2021	FY 2023	FY 2021	FY 2023	FY 2025					
WA	I&O	LANL	New TA-16 Fire Station 5 (SPEAR)	As originally notified			18,600	21,200	21,200	1,900	21,200	0	0	0	0	0	0	0	0
							11%		FY 2022	FY 2022	FY 2023	FY 2020	FY 2022	FY 2030					
WA	I&O	LANL	TA-15 DARHT Electrical Circuit Upgrade	As originally notified			13,909	13,908	13,908	1,964	1,964	0	0	0	0	0	11,944	0	0
							100%		FY 2019	FY 2019	FY 2022	FY 2019	FY 2022	FY2023					
WA	I&O	LANL	TA-16-0260 Pressing, Machining and Testing Facility Upgrades and UPS Replacement (formerly TA 16-260 Pressing, Machining, and Testing Facility Upgrades)	As originally notified			15,700	12,810	9,948	1,960	9,948	0	0	0	0	0	0	0	0
							27%		FY 2022	FY 2022	FY 2023	FY2022	FY2024	FY2024					
WA	I&O	LANL	New TA-22 Detonator Storage Magazines	As originally notified			11,137	11,137	11,137	1,437	1,437	9,700	0	0	0	0	0	0	0
							16%		FY 2022	FY 2022	FY 2023	FY2022	FY2023	FY2025					

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	I&O	LANL	TA-55 Fire Suppression Water Line for Program Facilities	As originally notified			13,895	13,894	13,894	579	13,894	0	0	0	0	0	0	0	0
							1%		NA	NA	FY2026	FY2023	FY2024	FY2026					
WA	I&O	LANL	TA-55 Fire Suppression Water Line for Security Facilities	As originally notified			9,472	9,472	9,472	1,287	0	1,287	8,185	0	0	0	0	0	0
							2%		FY 2023	FY 2023	FY 2025	FY 2023	FY 2024	FY 2025					
WA	I&O	LANL	New TA-63 Fire Station 1 (STAR)	As originally notified			22,500	22,500	22,500	995	0	22,500	0	0	0	0	0	0	0
							0%		FY 2024	FY 2025	FY 2026	FY 2024	FY 2025	FY 2026					
WA	I&O	LANL	SM-39 Window Replacements	As originally notified			11,620	11,620	11,620	1,500	0	0	1,500	10,120	0	0	0	0	0
					✓		0%		FY 2025	FY 2026	FY 2027	FY 2025	FY 2026	FY 2027					
WA	I&O	LANL	WETF Redundant Fire Loop Installation	Install a redundant fire water supply system to comply with DOE Order 420.1C.			15,166	NA	15,166	1,283	0	0	0	1,283	13,883	0	0	0	0
							7%		NA	NA	FY2024	FY2022	FY2023	FY2024					
WA	I&O	NNSS	Area 6 CP Hill to Fire Station Junction Water Line Upgrade	As originally notified			5,500	5,500	5,636	500	5,636	0	0	0	0	0	0	0	0
					✓		0%		FY 2025	FY 2026	FY 2028	FY 2025	FY 2026	FY 2028					
WA	I&O	NNSS	DAF Area Watershed Drainage Upgrades	Address infrastructure upgrades to mitigate flood risks and protect recent and upcoming investments at the NNSS.			14,700	NA	14,700	900	0	0	0	900	13,800				
							2%		FY 2024	FY 2024	FY 2026	FY 2023	FY 2024	FY 2025					
WA	I&O	NNSS	DAF New Operations Support Facility Bldg. 06-540 (STAR)	As originally notified			23,500	23,500	22,000	2,350	0	22,000	0	0	0	0	0	0	0

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					✓		0%		FY 2025	FY 2026	FY 2027	FY 2025	FY 2026	FY 2027					
WA	I&O	NNSS	DAF Workplace Upgrade	Reconfigure and modernize the administrative building with modern workspace, technology, lighting, and ergonomic enhancements.			9,700	NA	9,700	1,600	0	0	0	1,600	8,100	0	0	0	0
							65%		FY 2020	FY 2020	FY 2022	FY 2022	FY2023	FY2024					
WA	I&O	NNSS	Mercury Mission Technical Support Facility (Formerly Mercury 23-462 Building 3)	As originally notified			13,800	16,500	16,500	950	16,500	0	0	0	0	0	0	0	0
					✓				FY 2026	FY 2027	FY 2028	FY 2026	FY 2027	FY 2028					
WA	I&O	NNSS	New Area 6 Tweezer Solar PV and Storage	Project will install a new ~4-hour resiliency capability using photovoltaic arrays (PV) and battery energy storage system (BESS) that leverages existing distribution and substation infrastructure. Project will provide 3 to 5 MW of PV and contribute to the overall compliance with Executive Order 14008 and 14057 resulting in annual electricity savings, reducing greenhouse gas emissions, and increase energy security at the NNSS.			27,500	NA	27,500	4,000	0	0	0	0	27,500	0	0	0	0
							0%		FY 2024	FY 2025	FY 2027	FY 2024	FY 2025	FY 2027					

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					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	I&O	NNSS	New Area 23 Mercury Solar PV & Storage Installation (ERICA)	As originally notified			23,800	23,800	23,800	3,600	0	0	3,600	20,200	0	0	0	0	0
							100%		NA	NA	FY2024	FY2022	FY2023	FY2023					
WA	I&O	NNSS	New DAF Operations Complex Site Preparations	As originally notified			6,500	8,000	5,450	800	5,450	0	0	0	0	0	0	0	0
							97%		NA	NA	FY2025	FY2022	FY2023	FY2025					
WA	I&O	NNSS	New DAF Operations Complex Utilities	As originally notified			7,500	9,700	9,700	900	900	8,800	0	0	0	0	0	0	0
							100%		FY 2019	FY 2020	FY 2022	FY 2019	FY 2021	FY2023					
WA	I&O	NNSS	New Nevada Site Operations Facility Building 23-461 (formerly Mercury Modernization Bldg. 23-461)	As originally notified			15,000	19,800	20,500	950	20,500	0	0	0	0	0	0	0	0
							5%		FY 2024	FY 2025	FY 2028	FY 2023	FY 2024	FY 2026					
WA	I&O	NNSS	New Principal Underground Laboratory for Subcritical Experiments (PULSE) (formerly U1a) 02b Refuge Station	As originally notified			16,700	16,700	16,700	2,000	0	2,000	14,700	0	0	0	0	0	0
							0%		FY 2023	FY 2024	FY 2025	FY 2024	FY 2025	FY 2026					
WA	I&O	NNSS	New PULSE (formerly U1a) Centralized Monitor and Control Center	As originally notified			12,000	12,000	12,000	1,700	0	0	1,700	10,300	0	0	0	0	0
							82%		FY 2019	FY 2019	FY 2021	FY 2019	FY2023	FY2024					
WA	I&O	NNSS	New PULSE (formerly U1a) Mission Technical Support Facility	As originally notified			13,500	16,500	16,500	950	16,500	0	0	0	0	0	0	0	0
							10%		FY 2021	FY 2022	FY 2024	FY2022	FY2023	FY2026					

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	I&O	NNSS	New PULSE (formerly U1a) Operations Support Facility 01-380 (STAR) (formerly U1a Operations Support Facility 01-351)	As originally notified			19,500	19,900	29,430	1,730	1,730	0	27,700	0	0	0	0	0	0
					✓		0%		FY 2025	FY 2026	FY 2027	FY 2025	FY 2026	FY 2027					
WA	I&O	NNSS	RNCTEC & Substation Watershed Drainage Upgrades	Address infrastructure upgrades to mitigate flood risks and protect recent and upcoming investments at the NNSS.			11,500	NA	11,500	500	0	0	0	500	0	11,000	0	0	0
							21%		FY 2022	FY 2022	FY 2024	FY 2022	FY 2024	FY 2025					
WA	I&O	NNSS	Tweezer Substation Upgrade	As originally notified			11,000	11,000	11,000	1,500	11,000	0	0	0	0	0	0	0	0
							16%		FY 2022	FY 2023	FY 2025	FY 2022	FY 2023	FY 2025					
WA	I&O	NNSS	PULSE (formerly U1a) Fire Detection and Alarm System Revitalization	This project includes the installation and updating of the fire detection and alarm system (FDAS) which includes cabling, heat/smoke detectors, linear heat detection, notification devices, and Fire Alarm Control Panels.			4,500	NA	9,550	450	5,500	4,050	0	0	0	0	0	0	0
							100%		NA	NA	NA	FY 2020	FY 2021	FY2023					
WA	I&O	NNSS	PULSE (formerly U1a) Potable Water System Upgrade	As originally notified			9,000	11,700	10,325	200	10,325	0	0	0	0	0	0	0	0
							8%		FY 2022	FY 2022	FY 2025	FY2022	FY2024	FY2026					
WA	I&O	NNSS	PULSE (formerly U1a) Underground Power Distribution Upgrade	As originally notified			13,000	13,000	13,000	1,500	1,500	0	11,500	0	0	0	0	0	0
					✓		0%		FY 2025	FY 2026	FY 2027	FY 2025	FY 2026	FY 2027					

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					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	I&O	PX	Building 15-33 Pump House and Tank Upgrades	Install a monitoring system to provide pressure, level and flow parameters from the 15-33A fire water supply. Scope will include flow meters for the high-pressure fire loop (HPFL) and a pressure relief bypass to allow for re-circulation of discharge water. This work will reinforce the response capabilities of the HPFL and it will allow for a modification of how the system is credited.			6,850	NA	6,850	0	0	0	0	6,850	0	0	0	0	0
							9%		NA	NA	FY 2026	FY 2023	FY 2024	FY 2025					
WA	I&O	PX	Building 15-34 Pump House and Tank Upgrades	As originally notified			6,350	6,350	6,350	0	0	6,350	0	0	0	0	0	0	0
							78%	NA	FY 2020	FY 2020	FY 2021	FY 2020	FY 2022	FY 2024					
WA	I&O	PX	New Advanced Fabrication Facility	As originally notified			17,000	17,000	17,900	1,000	17,900	0	0	0	0	0	0	0	0
							0%		FY 2024	FY 2025	FY 2026	FY 2023	FY 2025	FY 2027					
WA	I&O	PX	South Main Substation Switchgear, Capacitor Bank, & Controller Upgrade - 100 Circuit	As originally notified			12,625	12,625	12,625	1,900	0	1,900	0	10,725	0	0	0	0	0
							45%		NA	NA	FY 2024	FY 2022	FY 2023	FY 2024					
WA	I&O	PX	Southeast Circuit Upgrade	As originally notified			7,625	7,625	7,625	0	7,625	0	0	0	0	0	0	0	0
							2%		NA	NA	FY 2025	FY 2023	FY 2024	FY 2025					

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	I&O	SNL	Building 6530 High Radiation Laboratory Upgrade (AKA LINAC in TA-III)	As originally notified			5,400	5,400	5,400	400	0	5,400	0	0	0	0	0	0	0
							23%		NA	NA	FY 2024	FY 2021	FY 2022	FY 2025					
WA	I&O	SNL	Building 6715 Light Initiated High Explosive (LIHE) Test Facility Upgrades	As originally notified			7,000	23,410	23,410	750	12,550	10,860	0	0	0	0	0	0	0
					✓		0%		FY 2025	FY 2025	FY 2026	FY 2025	FY 2025	FY 2026					
WA	I&O	SNL	Burn Site Electrical Upgrade	Design and construct a replacement electrical power system for the Burn Site with increased capacity and replaces all the major components including the transformer and enabling systems.			5,374	NA	5,374	586	0	0	0	5,374	0	0	0	0	0
							0%		NA	NA	FY 2026	FY 2024	FY 2025	FY 2026					
WA	I&O	SNL	CA Electrical Substation 41, 42, 43 & 44 Upgrades	As originally notified			7,900	7,900	7,900	1,100	0	0	1,100	6,800	0	0	0	0	0
							50%		FY 2020	FY 2021	FY 2022	FY 2021	FY 2022	FY 2024					
WA	I&O	SNL	High-G Surveillance Testing Capability Addition (WETL/Pantex)	As originally notified			18,000	17,667	17,801	1,700	17,801	0	0	0	0	0	0	0	0
							0%		FY 2024	FY 2024	FY 2026	FY 2025	FY 2025	FY 2027					
WA	I&O	SNL	New C964 Microgrid (ERICA)	As originally notified			17,500	17,500	17,500	1,000	0	0	0	17,500	0	0	0	0	0
					✓		0%		FY 2026	FY 2027	FY 2028	FY 2026	FY 2027	FY 2028					

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					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	I&O	SNL	New CA Materials Science and Diagnostics Lab Facility (MSDL) (STAR)	Using SNL's Agile lab design will construct a 10,000 GSF of modern, flexible laboratory space. This project will enable Nuclear Deterrence Mission supporting science and diagnostics to begin to divest from C916.			28,000	NA	28,000	2,700	0	0	0	0	28,000	0	0	0	0
					✓		0%		FY 2026	FY 2027	FY 2028	FY 2026	FY 2027	FY 2028					
WA	I&O	SNL	New CA Complex Central Utility Building	This project will construct a new Central Utility Building and supporting infrastructure for the WESTLab Complex enabling efficient delivery of WESTLab facilities while providing critical redundancy to the C943 MANTL CUB reducing mission risk.			20,000	NA	20,000	1,500	0	0	0	0	20,000	0	0	0	0

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
					✓		0%		FY 2025	FY 2026	FY 2027	FY 2025	FY 2026	FY 2027					
WA	I&O	SNL	New CA Secure Weapons Integration Center (SWIC)	Construct a high bay lab space in support of Nuclear Deterrence programs, enabling a more comprehensive capability for hardware development, assembly, and testing. This building would allow for large-scale test builds with crane support, create electrical labs, and provide bonded storage to provide agile and timely development for programs interfacing with the Department of Defense.			26,500	NA	26,500	2,600	0	0	0	2,600	23,900	0	0	0	0
							14%		FY 2020	FY 2020	FY 2023	FY 2020	FY 2022	FY 2025					
WA	I&O	SNL	New Explosive Manufacturing Science and Technology (EMSAT) Facility	As originally notified			17,500	19,000	28,997	1,500	17,945	11,052	0	0	0	0	0	0	0
							19%		FY 2021	FY 2022	FY 2023	FY 2021	FY 2022	FY 2025					
WA	I&O	SNL	New Geosciences Laboratory-Building 740 (STAR) (formerly New Geosciences Laboratory)	As originally notified			18,500	18,500	23,808	1,750	20,213	3,595	0	0	0	0	0	0	0
					✓		0%		FY 2025	FY 2025	FY 2027	FY 2025	FY 2025	FY 2027					
WA	I&O	SNL	New Production Storage Facility	Design and construct a new ~ 10K GSF building for compliant storage of specialty materials in TA-I			11,342	NA	11,342	975	0	0	0	975	10,367	0	0	0	0

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
							0%		FY 2023	FY 2022	FY 2024	FY 2022	FY 2023	FY 2028					
WA	I&O	SNL	New Stockpile and Component Modernization Support Building (STAR)	As originally notified			16,400	16,500	30,000	1,500	1,500	0	0	0	0	0	0	0	28,500
							100%		FY 2020	FY 2021	FY 2022	FY 2020	FY 2021	FY 2024					
WA	I&O	SNL	New SNL/CA Limited Area Multi-Program (LAMP) Secure High Bay Laboratory Facility	As originally notified			19,000	21,600	21,600	1,900	21,600	0	0	0	0	0	0	0	0
							27%		FY 2023	FY 2023	FY 2025	FY 2023	FY 2024	FY 2026					
WA	I&O	SNL	NM New TA-II Master Substation	As originally notified			18,500	18,500	18,500	1,850	2,600	1,850	14,050	0	0	0	0	0	0
							1%		NA	NA	FY 2026	FY 2023	FY 2024	FY 2026					
WA	I&O	SNL	SNL\CA Site High Voltage LGS Replacement	As originally notified			5,700	5,700	5,700	600	0	5,700	0	0	0	0	0	0	0
							25%		FY 2022	FY 2022	FY 2024	FY 2022	FY 2023	FY 2025					
WA	I&O	SNL	Substation 36 Upgrade	As originally notified			10,000	10,000	10,000	1,000	10,000	0	0	0	0	0	0	0	0
					✓		0%		FY 2022	FY 2022	FY 2024	FY 2025	FY 2026	FY 2027					
WA	I&O	SNL	Substation 41 Replacement	Project will design and construct a replacement for Substation 41 and procure the major HV electrical components as long-lead Sandia Furnished Equipment (SFE).			19,486	NA	19,486	1,850	0	0	0	7,000	12,486	0	0	0	0
							23%		FY 2021	FY 2022	FY 2023	FY 2021	FY 2023	FY 2024					
WA	I&O	SNL	TA-I Substation 35 Upgrade (previously TA-I Substation 35 Replacement)	As originally notified			10,000	10,000	10,000	1,000	10,000	0	0	0	0	0	0	0	0

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					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
							8%		FY 2023	FY 2024	FY 2025	FY 2023	FY 2024	FY 2026					
WA	I&O	SNL	TA-III, V, & Remotes 5kV Substation Replacement	As originally notified			19,500	19,500	19,500	1,950	0	1,950	7,000	10,550	0	0	0	0	0
							25%		FY 2021	FY 2022	FY 2023	FY 2021	FY 2022	FY 2024					
WA	I&O	SNL	TA-IV District Chilled Water Expansion	As originally notified			18,250	14,650	14,650	1,500	14,650	0	0	0	0	0	0	0	0
							0%		FY 2024	FY 2025	FY 2027	FY 2024	FY 2025	FY 2027					
WA	I&O	SNL	Weapons Evaluation and Testing Laboratory Addition - Lab & Office Space (WETL/PX)	As originally notified			14,500	14,500	14,500	1,500	0	0	1,500	13,000	0	0	0	0	0
							0%		FY 2022	FY 2022	FY 2024	FY2024	FY2024	FY2026					
WA	I&O	SRFO	New Tritium Office Building (STAR)	As originally notified			19,600	17,850	30,000	1,750	0	17,850	12,150	0	0	0	0	0	0
							95%		FY 2019	FY 2020	FY 2022	FY 2019	FY 2020	FY 2024					
WA	I&O	SRS	234-7H Exhaust Ventilation System Installation Portfolio (previously 234-7H New Utility Support Building and Exhaust Ventilation System Installation)	As originally notified			11,900	20,936	22,173	1,700	22,173	0	0	0	0	0	0	0	0
					✓		0%		FY 2025	FY 2026	FY 2027	FY 2025	FY 2026	FY 2027					
WA	I&O	SRS	F Area Domestic Water System Upgrades	Project will install replacement domestic water wells and treatment plant			7,718	NA	7,718	500	0	0	0	7,718	0	0	0	0	0
					✓		0%		FY 2025	FY 2026	FY 2027	FY 2025	FY 2026	FY 2027					
WA	I&O	SRS	F Area Service Water Upgrades	Project will support long-term mission by refurbishing new F-Area wells, pumps, tank, treatment skid, and piping			13,892	NA	13,892	700	0	0	0	13,892	0	0	0	0	0

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					✓		0%		FY 2026	FY 2027	FY 2029	FY 2026	FY 2027	FY 2029					
WA	I&O	SRS	New Radiological Operations Center	Construct a facility to accommodate personnel, equipment, and vehicles for the Nuclear Emergency Support Team (NEST) Radiological Assistance Program (RAP) Regional Operations Center assets based at the Savannah River Site.			30,000	NA	30,000	3,000	0	0	0	0	30,000	0	0	0	0
							0%		FY 2023	FY 2024	FY 2025	FY 2023	FY 2024	FY 2026					
WA	I&O	Y-12	Bldgs 9201-01 & 9201-03 Vista Switchgear Installation	As originally notified			12,201	12,201	12,202	635	0	2,014	10,188	0	0	0	0	0	0
							19%		NA	NA	FY 2024	FY 2022	FY 2023	FY 2025					
WA	I&O	Y-12	Building 9201-05N AJ-5714 HVAC Replacement	As originally notified			5,413	6,330	6,330	286	6,330	0	0	0	0	0	0	0	0
							4%		FY 2023	FY 2024	FY 2026	FY 2023	FY 2024	FY 2026					
WA	I&O	Y-12	Bldg 9204-02 Switchgear 810 Replacement	Replace Switchgear 810 in Building 9204-2 that has been in continuous service for more than 60 years.			4,492	4,492	6,680	890	0	1,837	0	4,843	0	0	0	0	0
					✓		0%		FY 2025	FY 2026	FY 2027	FY 2025	FY 2026	FY 2027					
WA	I&O	Y-12	Building 9204-02E South Fire and Potable Water Laterals Replacement	Replace two high-risk potable water laterals and associated components for the Building 9204-2E production facility.			16,500	NA	16,500	1,700	0	0	0	1,700	14,800	0	0	0	0
							100%		NA	NA	NA	FY 2021	FY2021	FY2023					
WA	I&O	Y-12	Bldg 9204-02E Transformers 814 and 815 Replacement	As originally notified			6,560	6,560	7,340	572	6,560	780	0	0	0	0	0	0	0

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							100%		FY 2019	FY 2019	FY 2020	FY 2019	FY 2021	FY 2023					
WA	I&O	Y-12	Building 9215 North Fire Water Laterals Replacement	As originally notified			5,629	5,629	7,108	470	7,108	0	0	0	0	0	0	0	0
							100%		NA	NA	NA	FY2020	FY2021	FY2023					
WA	I&O	Y-12	Bldg 9215 Switchgear & Transformer 253 Replacement	As originally notified			5,886	5,886	9,975	1,500	9,400	575	0	0	0	0	0	0	
							0%		FY 2024	FY 2024	FY 2026	FY 2024	FY 2024	FY 2026					
WA	I&O	Y-12	Building 9720-32 Facility Conversion	As originally notified			14,723	14,723	14,723	2,300	0	0	2,300	12,423	0	0	0	0	0
							12%		NA	NA	FY 2024	FY 2022	FY 2024	FY 2025					
WA	I&O	Y-12	Building 9995 198/222 Feeders Electrical Panel Replacement	As originally notified			5,400	5,529	5,929	1,155	1,556	4,373	0	0	0	0	0	0	0
					✓		0%		FY 2025	FY 2025	FY 2027	FY 2025	FY 2025	FY 2027					
WA	I&O	Y-12	Building 9998 H2 Supply Fans H2-3 and H2-4 Revitalization[a]	Refurbish Bldg. 9998 Supply Fans H2-3 and H2-4 to enable adequate temperature and humidity control in the Dimensional Inspection area of the facility.			13,356	NA	13,356	0	0	0	0	13,356	0	0	0	0	0
							0%		FY 2021	FY 2021	FY 2022	FY 2024	FY 2024	FY 2026					
WA	I&O	Y-12	Development Facility Conversion (formerly Production Development Facility Acquisition and Revitalization Modification)	As originally notified			16,000	24,000	25,171	1,500	2,171	0	23,000	0	0	0	0	0	0

[a] Design completed under a previously deferred project and is not included in the current TEC. Design completed for $618K in Oct 2020.

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							0%		FY 2022	FY 2022	FY 2024	FY 2026	FY 2027	FY 2029					
WA	I&O	Y-12	New West End Production Change House	As originally notified			13,824	13,824	25,000	1,284	0	0	0	0	25,000	0	0	0	0
WA	**I&O**			**SUBTOTAL**			**NA**	**NA**	**NA**	**NA**	**NA**	**272,042**	**214,345**	**310,944**	**287,842**	**34,461**	**11,944**	**-**	**NA**
					NA	NA	NA		NA	NA	NA	NA	NA	NA					
WA	STA	NA	MC (TEC <$5M)	NA			NA	NA	NA	NA	NA	583	2,700	3,341	3,853	965	4,184	19,592	NA
							0%		FY 2025	FY 2025	FY 2025	FY 2026	FY 2026	FY 2027					
WA	STA	AR	TRACOM (Training Command) Construct Multi-Use Facility	As originally notified			14,182	14,182	28,000	2,800	0	0	0	0	28,000	0	0	0	0
							0%		NA	NA	FY 2027	FY 2029	FY 2029	FY 2030					
WA	STA	AR	Training Command Drive Track/Skid Pad	As originally notified			7,277	7,277	7,277	727	0	0	0	0	0	0	0	7,277	0
							0%		NA	NA	FY2023	FY 2024	FY 2024	FY 2025					
WA	STA	AR	Training Command Physical Training Facility	As originally notified			3,947	5,787	6,000	600	0	0	6,000	0	0	0	0	0	0
							30%		FY 2020	FY 2021	FY 2022	FY 2020	FY 2022	FY 2025					
WA	STA	NM	Agent Operations Western Command Facility	As originally notified			10,000	14,383	20,383	2,000	14,383	6,000	0	0	0	0	0	0	0
							45%		FY 2021	FY 2022	FY 2023	FY 2023	FY 2023	FY 2024					
WA	STA	NM	Vehicle Maintenance Facility – Agent Operation Western Command (AOWC) VMF	As originally notified			12,000	23,989	23,989	2,390	23,989	0	0	0	0	0	0	0	0
					✓		0	0	FY 2028	FY 2028	FY 2029	FY 2028	FY 2028	FY 2029					
WA	STA	NM	Aviation - Hanger Extension	Aviation - Hanger Extension			11,500	NA	11,500	1,150	0	0	0	0	0	0	11,500	0	0
					✓		0	0	FY 2028	FY 2028	FY 2029	FY 2028	FY 2028	FY 2029					

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					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
WA	STA	NM	Aviation - Apron C Replacement	Aviation - Apron C Replacement			12,000	NA	12,000	1,200	0	0	0	0	0	0	12,000	0	0
							0%		FY 2026	FY 2026	FY 2027	FY 2027	FY 2027	FY 2028					
WA	STA	TX	Agent Operations Central Command Federal Agent Facility	As originally notified			15,300	15,300	25,000	2,500	0	0	0	0	0	25,000	0	0	0
							5%		FY 2023	FY 2023	FY 2024	FY 2023	FY 2024	FY 2025					
WA	STA	TX	Agent Operations Central Command Sitewide Infrastructure Upgrades	As originally notified			5,000	11,000	12,532	1,253	3,856	8,676	0	0	0	0	0	0	0
							0%	NA	FY 2022	FY 2023	FY 2024	FY 2025	FY 2025	FY 2027					
WA	STA	TX	Vehicle Maintenance Facility – Agent Operations Central Command VMF	As originally notified			15,000	25,000	30,000	3,000	0	0	0	30,000	0	0	0	0	0
WA	**STA**			**SUBTOTAL**			**NA**	**NA**	**NA**	**NA**	**NA**	**15,259**	**8,700**	**33,341**	**31,853**	**25,965**	**27,684**	**26,869**	**NA**
					NA	NA	NA		NA	NA	NA	NA	NA	NA					
WA	DNS	NA	MC (TEC <$5M)	NA			NA	NA	NA	NA	NA	2,038	2,193	2,303	2,376	2,426	2,477	2,529	NA
							0%		NA	NA	FY 2027	FY 2028	FY 2029	FY 2032					
WA	DNS	PX	Pantex Zone 4 PIDAS Vehicle Barriers	As originally notified			9,300	11,780	11,780	430	250	0	0	0	0	0	0	11,530	0
							0%		FY 2020	FY 2020	FY 2024	FY 2025	FY 2026	FY 2028					
WA	DNS	PX	Zone 12 PIDAS Vehicle Barriers	As originally notified			11,250	10,850	10,850	250	250	10,600	0	0	0	0	0	0	0
							30%		NA	NA	FY 2023	FY 2022	NA	FY 2025					
WA	DNS	Y-12	Y12 PIDAS Vehicle Barriers	As originally notified			9,300	9,160	9,160	430	9,160	0	0	0	0	0	0	0	0
WA	**DNS**			**SUBTOTAL**			**NA**	**NA**	**NA**	**NA**	**NA**	**12,638**	**2,193**	**2,303**	**2,376**	**2,426**	**2,477**	**14,059**	**NA**
WA				**WA Total**			**NA**	**NA**	**NA**	**NA**	**NA**	**558,672**	**514,479**	**718,994**	**650,200**	**241,017**	**193,891**	**250,837**	**NA**

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			Icons		New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
					NA	NA	NA		NA	NA	NA	NA	NA	NA					
DNN	MMM	NA	MC (TEC <$5M)	NA			NA	NA	NA	NA	NA	18,951	20,391	21,411	22,096	22,560	23,034	23,517	NA

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					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
							96%		FY 2020	FY 2021	FY 2022	FY 2020	FY 2022	FY 2024					
DNN	MMM	SRS	105-K Perimeter Entry Control Facility (ECF-3) (formerly DAC3 Perimeter ECF and formerly K-Area Protected Area Perimeter Entry Control Facility (ECF))	As originally notified			8,000	16,820	21,517	2,516	16,820	4,697	0	0	0	0	0	0	0
							72%		FY 2020	FY 2020	FY 2021	FY 2021	FY 2023	FY 2024					
DNN	MMM	SRS	105-K Material Access Area (MAA) Entry Control Facility (ECF) (formerly 105-K Entry Control Facility Expansion)	As originally notified			13,000	18,439	23,370	2,512	18,439	4,427	504	0	0	0	0	0	0
							0%		FY 2024	FY 2025	FY 2027	FY 2024	FY 2025	FY 2027					
DNN	MMM	SRS	Commodity Center	As originally notified			18,000	18,000	18,000	2,000	0	0	18,000	0	0	0	0	0	0
							0%		FY 2024	FY 2025	FY 2026	FY 2024	FY 2025	FY 2026					
DNN	MMM	SRS	Install CCO Storage Racks	As originally notified			10,000	10,000	10,000	58	0	0	10,000	0	0	0	0	0	0
DNN	**MMM**			**SUBTOTAL**			**NA**	**NA**	**NA**	**NA**	**NA**	**28,075**	**48,895**	**21,411**	**22,096**	**22,560**	**23,034**	**23,517**	**NA**
					NA	NA	NA		NA	NA	NA	NA	NA	NA					
DNN	GMS	NA	MC (TEC <$5M)	NA			NA	NA	NA	NA	NA	3,562	3,833	4,024	4,153	4,240	4,329	4,420	NA
							0%		FY 2020	FY 2021	FY 2022	FY 2020	FY 2024	FY 2025					
DNN	GMS	Y-12	Oak Ridge Institute for Global Nuclear Security (ORIGNS)(formerly reported as Enhanced Training Center (ETC))	As originally notified			18,000	25,000	25,000	1,375	25,000	0	0	0	0	0	0	0	0
DNN	**GMS**			**SUBTOTAL**			**NA**	**NA**	**NA**	**NA**	**NA**	**3,562**	**3,833**	**4,024**	**4,153**	**4,240**	**4,329**	**4,420**	**NA**

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
					NA	NA	NA		NA	NA	NA	NA	NA	NA					
DNN	NPAC	NA	MC (TEC <$5M)	NA			NA	NA	NA	NA	NA	0	0	3,000	0	0	0	0	NA
DNN	**NPAC**			**SUBTOTAL**			**NA**	**NA**	**NA**	**NA**	**NA**	**-**	**-**	**3,000**	**-**	**-**	**-**	**-**	**NA**
					N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A					
DNN	R&D	NA	MC (TEC <$5M)	NA			N/A	N/A	N/A	N/A	N/A	5,660	6,090	6,395	6,599	6,738	6,879	7,024	N/A
							53%		FY 2021	FY 2023	FY 2026	FY 2023	FY 2023	FY 2025					
DNN	R&D	ORNL	Uranium Science and Technology Center	As originally notified			23,902	23,902	23,902	750	4,900	19,002	0	0	0	0	0	0	0
					✓		0%		FY 2028	FY 2028	FY 2030	FY 2028	FY 2028	FY 2030					
DNN	R&D	PNNL	325 RPL (Radiochemical Processing Laboratory) Impacted Laboratory Upgrade	As originally notified			9,900	9,900	9,900	900	0	0	0	0	0	0	9,900	0	0
							0%		FY 2025	FY 2025	FY 2025	FY 2025	FY 2025	FY 2027					
DNN	R&D	PNNL	325 RPL (Radiochemical Processing Laboratory) Inorganic Synthesis Laboratory Upgrade	As originally notified			9,400	9,400	9,400	900	0	0	0	9,400	0	0	0	0	0
					✓		0%		FY 2026	FY 2026	FY 2028	FY 2026	FY 2026	FY 2028					
DNN	R&D	PNNL	325 RPL (Radiochemical Processing Laboratory) Mass Spectrometry and Solvent Extraction Laboratory Upgrade	As originally notified			8,950	8,950	8,950	900	0	0	0	0	8,950	0	0	0	0
							0%		FY 2024	FY 2024	FY 2025	FY 2024	FY 2024	FY 2026					

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					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
DNN	R&D	PNNL	325 RPL (Radiochemical Processing Laboratory) Plutonium-Tritium Processing Lab Upgrade	As originally notified			6,500	6,500	8,300	900	0	0	8,300	0	0	0	0	0	0
DNN	R&D	PNNL	325 RPL (Radiochemical Processing Laboratory) Tritium and Microscopy Laboratory Upgrade	As originally notified	✓		0% 10,700	10,700	FY 2026 10,700	FY 2026 700	FY 2028 0	FY 2026 0	FY 2026 0	FY 2028 0	700	10,000	0	0	0
DNN	**R&D**			**SUBTOTAL**			**NA**	**NA**	**NA**	**NA**	**NA**	**24,662**	**14,390**	**24,995**	**16,249**	**16,738**	**16,779**	**7,024**	**NA**
DNN	NCTIR	NA	MC (TEC <$5M)	NA	N/A	N/A	N/A N/A	N/A	N/A N/A	N/A N/A	N/A N/A	N/A 8,000	N/A 8,608	N/A 9,038	9,328	9,524	9,724	9,928	N/A
DNN	NCTIR	HQ	Emergency Operations Center Redesign (CEOC)	As originally notified			0% 12,524	12,524	FY 2023 12,524	FY 2024 751	FY 2025 0	FY 2023 12,524	FY 2025 0	FY 2027 0	0	0	0	0	0
DNN	NCTIR	LLNL	Clean Lab	As originally notified			5% 6,000	6,000	NA 8,000	NA 90	FY 2024 0	FY 2023 8,000	FY 2024 0	FY 2025 0	0	0	0	0	0
DNN	NCTIR	NNSS	A-01 Second Floor Improvements	Modify building A-01 to establish a national training facility for the Office of Incident Response	✓		0% 6,300	NA	FY 2025 6,300	FY 2026 550	FY 2027 0	FY 2025 0	FY 2026 0	FY 2027 6,300	0	0	0	0	0
DNN	NCTIR	PNNL	Forensic Lab Upgrades	As originally notified			0% 5,000	5,000	NA 5,000	NA 300	FY 2024 0	FY 2023 300	FY 2023 4,700	FY 2024 0	0	0	0	0	0
DNN	**NCTIR**			**SUBTOTAL**			**NA**	**NA**	**NA**	**NA**	**NA**	**28,824**	**13,308**	**15,338**	**9,328**	**9,524**	**9,724**	**9,928**	**NA**
DNN				**DNN Total**			**NA**	**NA**	**NA**	**NA**	**NA**	**85,123**	**80,426**	**68,768**	**51,826**	**53,062**	**53,866**	**44,889**	**NA**

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
					NA	NA	NA		NA	NA	NA	NA	NA	NA					
NR	NR	NA	MC (TEC <$5M)	NA			NA	NA	NA	NA	NA	1,126	6,541	1,617	17,673	65,095	39,629	63,150	NA
							85%		FY 2022	FY 2023	FY 2024	FY 2022	FY 2023	FY 2024					
NR	NR	BL	BL A7 Office Building	As originally notified			19,000	19,000	19,000	0	19,000	0	0	0	0	0	0	0	0
							65%		NA	NA	FY 2025	NA	NA	FY 2025					
NR	NR	BL	BL AMTL Upgrade EMTF Infrastructure	As originally notified			7,900	7,900	7,900	1,060	4,140	3,760	0	0	0	0	0	0	0
					✓		0%		FY 2025	FY 2026	FY 2030	FY 2025	FY 2026	FY 2030					
NR	NR	BL	BL Classified Islands	The Classified Island Projects constructs separate and distinct classified information areas within the physical security boundary.			25,302	NA	25,302	1,826	0	0	0	1,826	0	14,697	8,779	0	0
							100%		NA	NA	FY 2022	NA	NA	FY 2023					
NR	NR	BL	BL Firehouse	As originally notified			Below $5M	5,195	5,195	-	5,195	0	0	0	0	0	0	0	0
							0%		NA	NA	FY 2026	NA	FY 2024	FY 2026					
NR	NR	BL	BL Outfall 001 Detention Basin	As originally notified			7,800	7,800	7,696	950	0	950	6,746	0	0	0	0	0	0
							0%		FY 2024	FY 2026	FY 2028	FY 2024	FY 2026	FY 2028					
NR	NR	BL	BL Shock and Vibration Test Facility (SVTF) and Fundamental Shock and Vibration Test Laboratory (FSVTL)	As originally notified			17,096	17,096	22,096	0	0	22,096	0	0	0	0	0	0	0
							0%		FY 2023	FY 2023	FY 2026	FY 2023	FY 2023	FY 2026					
NR	NR	BL	BL Simulation Development Laboratory and BRES	As originally notified			19,000	19,000	29,250	NA	0	29,250	0	0	0	0	0	0	0
							3%		NA	NA	FY 2025	FY 2022	FY 2023	FY 2030					
NR	NR	BL	BL Warehouse Upgrade	As originally notified			8,079	10,880	10,480	480	480	0	0	0	0	0	0	0	10,000

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
							0%		FY 2023	NA	FY 2026	FY 2023	NA	FY 2026					
NR	NR	KL	KL 002 Outfall	As originally notified			7,600	8,828	9,000	972	0	972	0	8,028	0	0	0	0	0
					✓		0%		FY 2025	FY 2026	FY 2030	FY 2025	FY 2026	FY 2030					
NR	NR	KL	KL Classified Islands	The Classified Island Projects constructs separate and distinct classified information areas within the physical security boundary.			18,039	NA	18,039	1,433	0	0	0	1,433	0	2,359	6,482	7,765	0
							6%		FY 2022	FY 2023	FY 2024	FY 2021	FY 2023	FY 2026					
NR	NR	KL	KL Data Center Power and Capacity Upgrades	As originally notified			12,911	12,911	15,159	1,259	1,259	13,900	0	0	0	0	0	0	0
							100%	NA	FY 2021	FY 2021	FY 2023	FY 2021	FY 2021	FY 2023					
NR	NR	KL	KL Legacy Eliminating Office Building	As originally notified			19,000	19,000	19,000	950	19,000	0	0	0	0	0	0	0	0
							1%		FY 2022	FY 2023	FY 2028	FY 2022	FY 2024	FY 2029					
NR	NR	KL	KL Radio Upgrade	As originally notified			17,800	17,800	24,453	1,000	1,000	0	0	23,453	0	0	0	0	0
							0%		NA	NA	FY 2028	NA	NA	FY 2028					
NR	NR	KL	KL RML Building Envelope	As originally notified			6,939	7,210	7,210	630	0	630	0	0	6,580	0	0	0	0
							0%		FY 2020	FY 2023	FY 2024	FY 2020	FY 2025	FY 2027					
NR	NR	KL	KL RML HVAC Upgrade (formerly RML HVAC Upgrade Design)	As originally notified			18,230	11,700	11,700	945	945	0	0	0	10,755	0	0	0	0
					✓		0%		FY 2025	FY 2025	FY 2027	FY 2025	FY 2025	FY 2027					

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					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
NR	NR	KS	KS B94 Security Indoor Firing Range	This project renovates the indoor firing range, originally built in 1993, to meet modern day firing range codes and standards. The renovation includes new firing range lighting, bullet trap, and ventilation, as well as upgrades to the building shell and drainage.			6,977	NA	6,977	637	0	0	0	637	6,340	0	0	0	0
							12%		NA	NA	FY 2025	NA	NA	FY 2025					
NR	NR	KS	KS CAS Relocation	As originally notified			6,100	6,100	7,631	1,288	1,088	200	6,343	0	0	0	0	0	0
					✓		0%		FY 2025	FY 2026	FY 2030	FY 2025	FY 2026	FY 2030					
NR	NR	KS	KS Classified Islands	The Classified Island Projects constructs separate and distinct classified information areas within the physical security boundary.			18,583	NA	18,583	1,083	0	0	0	1,083	0	7,590	9,910	0	0
							0%		NA	NA	FY 2025	NA	NA	FY 2025					
NR	NR	KS	KS East Gate Access	As originally notified			Under $5M	6,273	6,273	300	3,100	0	3,173	0	0	0	0	0	0
					✓		0%		FY 2025	FY 2026	FY 2027	FY 2024	FY 2026	FY 2027					
NR	NR	KS	KS Firehouse	This project replaces a 70 year old structure and provides a new, upgraded Firehouse facility to meet the current, and foreseeable future Emergency Services needs of the Kesselring Site.			14,940	NA	14,940	1,500	0	0	1,500	13,440	0	0	0	0	0

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Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
					✓		0%		FY 2027	FY 2028	FY 2032	FY 2025	FY 2028	FY 2032					
NR	NR	KS	KS Fire Systems Upgrade	This project updates the fire alarm system by replacing obsolete equipment, improving communication speeds on the primary signaling line circuits, updating notification appliance coverage, and updating pull stations for consistency across the Kesselring site.			23,667	NA	23,667	1,135	0	0	0	1,135	0	0	0	22,532	0
							14%		FY 2020	FY 2022	FY 2026	FY 2020	FY 2022	FY 2026					
NR	NR	KS	KS High Yard 30 Upgrade	As originally notified			8,269	11,460	16,677	623	960	15,717	0	0	0	0	0	0	0
							0%		FY 2023	FY 2025	FY 2029	FY 2024	FY 2025	FY 2029					
NR	NR	KS	KS Radio Upgrade	As originally notified			17,678	18,790	23,829	1,113	0	0	1,113	0	22,716	0	0	0	0
							65%		FY 2019	FY 2021	FY 2025	FY 2019	FY 2021	FY 2024					
NR	NR	KS	KS S8G Weather Resistant Enclosure	As originally notified			7,700	12,540	12,540	1,250	12,540	0	0	0	0	0	0	0	0
					✓		0%		FY 2025	FY 2026	FY 2027	FY 2025	FY 2026	FY 2027					
NR	NR	NRF	NRF Classified Islands	The Classified Island Projects constructs separate and distinct classified information areas within the physical security boundary.			10,255	NA	10,255	906	0	0	0	906	9,349	0	0	0	0
							0%		FY 2023	FY 2024	FY 2028	FY 2025	FY 2025	FY 2030					
NR	NR	NRF	NRF ECF Electric Heat Conversion	As originally notified			13,500	13,500	13,500	1,000	0	0	0	1,000	0	0	12,500	0	0
							100%	NA	FY 2021	FY 2021	FY 2022	FY 2021	FY 2021	FY 2023					

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					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
NR	NR	NRF	NRF Deactivation and Decommissioning (D&D) Supporting Infrastructure	As originally notified			15,700	15,700	15,700	785	15,700	0	0	0	0	0	0	0	0
							0%		FY 2024	FY 2026	FY 2030	FY 2025	FY 2026	FY 2030					
NR	NR	NRF	NRF Integrated Electric Heat Conversion	As originally notified			13,500	13,500	13,500	1,000	0	0	0	1,000	0	0	12,500	0	0
							86%	NA	FY 2019	FY 2019	FY 2020	FY 2019	FY 2020	FY 2025					
NR	NR	NRF	NRF Northeast Boundary Area	As originally notified			9,200	13,700	13,700	1,200	13,700	0	0	0	0	0	0	0	0
							0%		NA	NA	FY 2026	NA	NA	FY 2028					
NR	NR	NRF	NRF Transporter Path	As originally notified			6,745	6,745	8,487	479	0	479	0	0	8,008	0	0	0	0
							0%		NA	NA	FY 2028	FY 2024	FY 2025	FY 2028					
NR	NR	NRF	NRF Utility Expansion Northeast	As originally notified			6,100	6,100	7,770	400	0	0	400	0	7,370	0	0	0	0
NR	**NR**			**NR Total**			**NA**	**NA**	**NA**	**NA**	**NA**	**89,080**	**25,816**	**55,558**	**88,791**	**89,741**	**89,800**	**93,447**	**NA**
					NA	NA	NA		NA	NA	NA	NA	NA	NA					
Inst	Inst	LANL	MC (TEC <$5M)	NA			NA	NA	NA	NA	NA		0	0	0	0	0	0	NA
					NA	NA	NA		NA	NA	NA	NA	NA	NA					
Inst	Inst	LLNL	MC (TEC <$5M)	NA			NA	NA	NA	NA	NA		0	14,525	11,302	2,500	13,320	4,325	NA
					NA	NA	NA		NA	NA	NA	NA	NA	NA					
Inst	Inst	NNSS	MC (TEC <$5M)	NA			NA	NA	NA	NA	NA		0	14,481	13,381	15,081	15,081	16,681	NA
					NA	NA	NA		NA	NA	NA	NA	NA	NA					
Inst	Inst	PX	MC (TEC <$5M)	NA			NA	NA	NA	NA	NA		0	0	500	0	0	1,600	NA
					NA	NA	NA		NA	NA	NA	NA	NA	NA					
Inst	Inst	SNL	MC (TEC <$5M)	NA			NA	NA	NA	NA	NA		0	2,040	2,081	2,122	2,165	2,208	NA
					NA	NA	NA		NA	NA	NA	NA	NA	NA					
Inst	Inst	Y-12	MC (TEC <$5M)	NA			NA	NA	NA	NA	NA		0	7,038	7,178	7,322	7,468	7,617	NA
					✓		0%		FY 2024	FY 2024	FY 2025	FY 2024	FY 2024	FY 2025					

			Icons		✓	✓			Original			Current							
					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
Inst	Inst	LANL	Bldg TA-35-0086 Development of Laboratory Space to Support New Capability - Low Enriched Fuel Fabrication	Upgrade infrastructure in a 3,500 sq. ft. laboratory space at TA-35-0086 to develop enriched fuel needs. This project will design, purchase and install the specific facility and process infrastructure required to develop a Low Enriched Fuel Fabrication (LEFFF) Program at LANL.			12,174	NA	12,174	700	0	0	700	11,474	0	0	0	0	0
							4%		FY 2023	FY 2023	FY 2024	FY 2022	FY 2024	FY 2026					
Inst	Inst	LANL	Diamond Drive Road Upgrades	As originally notified			24,000	24,000	24,000	900	0	900	23,100	0	0	0	0	0	0
							5%		FY 2019	FY 2019	FY 2021	FY 2020	FY 2024	FY 2027					
Inst	Inst	LANL	Modular Construction Light Manufacturing Laboratory	As originally notified			14,000	23,500	23,500	1,700	14,000	0	9,500	0	0	0	0	0	0
							82%		FY 2020	FY 2020	FY 2022	FY 2020	FY 2022	FY 2024					
Inst	Inst	LANL	New General Purpose Office Building in Pajarito Corridor (formerly Construct General Purpose Office Building in Pajarito Corridor)	As originally notified			19,000	23,500	23,500	900	23,500	0	0	0	0	0	0	0	0
							20%		FY 2023	NA	NA	NA	NA	FY 2025					
Inst	Inst	LANL	Pajarito Road Traffic Circle Construction	As originally notified			6,500	6,500	9,435	500	0	500	8,935	0	0	0	0	0	0
							0%		NA	NA	FY 2025	NA	NA	FY 2026					
Inst	Inst	LANL	Pecos & Pajarito Roads Pedestrian Overpass (TA-50)	As originally notified			8,750	8,750	8,750	750	0	0	750	8,000	0	0	0	0	0
					✓		0%		FY 2024	FY 2025	FY 2026	FY 2024	FY 2025	FY 2026					

			Icons		✓	✓			Original			Current							
					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
Inst	Inst	LANL	TA-06 to TA-48 Electrical Distribution Line Installation	Provides approximately 1.5 miles of overhead line, increasing capacity.			12,900	NA	12,900	1,289	0	0	1,289	11,611	0	0	0	0	0
							10%		FY 2023	FY 2023	FY 2024	FY 2022	FY 2024	FY 2026					
Inst	Inst	LANL	TA-15 New Construction General Purpose Laboratory/Office Building 1-STAR	As originally notified			22,500	24,000	24,000	1,400	0	1,400	22,600	0	0	0	0	0	0
							1%		FY 2024	FY 2024	FY 2025	FY 2024	FY 2024	FY 2026					
Inst	Inst	LANL	TA-33-0401 Secure Laboratory & Office Building	As originally notified			23,500	23,500	23,500	1,500	0	0	1,500	22,000	0	0	0	0	0
							0%		NA	NA	FY 2025	NA	NA	FY 2025					
Inst	Inst	LANL	TA-48 East Utilities and Road Installation	As originally notified			6,130	6,130	6,130	750	0	0	750	5,380	0	0	0	0	0
					✓		0%		FY 2024	NA	FY 2025	FY 2024	NA	FY 2025					
Inst	Inst	LANL	TA-48 Electrical Line Relocation and Electrical Duct Bank Installation	Relocates the above ground 13.2kV S-09 electrical line and the underground 13.2 kV S-10 electrical line to allow for the new road layout of Gamma Ray Road and proposed facilities within TA-48.			5,503	NA	5,503	316	0	0	316	5,187	0	0	0	0	0
							0%		FY 2024	FY 2024	FY 2025	FY 2024	FY 2024	FY 2025					
Inst	Inst	LANL	TA-48 Network and Infrastructure Engineering (NIE) Duct Bank Installation	As originally notified			9,093	9,093	9,093	506	0	0	506	8,587	0	0	0	0	0
							0%		FY 2024	FY 2024	FY 2025	FY 2024	FY 2024	FY 2025					
Inst	Inst	LANL	TA-48/55 Water Line Relocations	As originally notified			7,188	7,188	7,188	569	0	0	569	6,619	0	0	0	0	0

			Icons		✓	✓			Original			Current							
					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
							60%		FY 2019	N/A	N/A	FY 2021	FY 2022	FY 2024					
Inst	Inst	LANL	TA-51 Office Building (formerly New Office Building)	As originally notified			9,500	15,000	15,000	500	500	9,000	5,500	0	0	0	0	0	0
							3%		FY 2024	FY 2024	FY 2025	FY 2024	FY 2024	FY 2026					
Inst	Inst	LANL	TA-63 Office Building (Formally notified as TA-48 Office Building (STAR))	As originally notified			23,500	23,500	29,500	1,500	0	0	1,500	28,000	0	0	0	0	0
							10%		FY 2023	FY 2023	FY 2025	FY 2023	FY 2023	FY 2025					
Inst	Inst	LANL	Bldg. 03-2327 Revitalization	To provide the necessary power and cooling equipment to support increased usage for HPC platforms that provide enterprise-wide simulation and computations.			5,700	3,000	5,700	297	0	297	5,403	0	0	0	0	0	0
					✓		0%		FY 2025	FY 2025	FY 2026	FY 2025	FY 2025	FY 2026					
Inst	Inst	LLNL	15CW Site 300 Utilities Installation and Site Preparation	Installation and improvements to city water utilities infrastructure including electrical, communication, city water and sewer within the site 300 to accommodate campus growth for the next two decades.			14,000	NA	14,000	1,700	0	0	0	1,700	12,300	0	0	0	0
							92%		FY 2020	FY 2020	FY 2021	FY 2021	FY 2021	FY 2024					
Inst	Inst	LLNL	B265 Environmental Safety & Health Office Building (STAR)	As originally notified			19,000	20,700	20,700	1,000	19,000	1,700	0	0	0	0	0	0	0
							100%		FY 2019	FY 2020	FY 2021	FY 2019	FY 2021	FY 2023					
Inst	Inst	LLNL	New B321G Manufacturing Bldg	As originally notified			15,000	18,500	19,337	1,000	15,837	3,500	0	0	0	0	0	0	0

			Icons		✓	✓			Original			Current							
					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
							77%		FY 2022	FY 2022	FY 2023	FY 2022	FY 2023	FY 2024					
Inst	Inst	LLNL	New Bldg 183 Multi-Program Office Bldg (STAR) (formerly New Bldg 260 Multi-Program Office Building: New Construction)	As originally notified			19,000	22,500	22,500	1,000	19,000	3,500	0	0	0	0	0	0	0
							0%		FY 2024	FY 2024	FY 2025	FY 2024	FY 2024	FY 2026					
Inst	Inst	LLNL	New Employee Center	As originally notified			23,000	23,000	23,000	2,760	0	0	2,760	20,240	0	0	0	0	0
							0%		FY 2024	FY 2024	FY 2025	FY 2024	FY 2024	FY 2026					
Inst	Inst	LLNL	New Mission Support Replacement Office Building 171 (STAR)	As originally notified			24,000	24,000	24,000	2,160	0	0	2,160	21,840	0	0	0	0	0
							7%		FY 2022	FY 2022	FY 2024	FY 2023	FY 2024	FY 2025					
Inst	Inst	LLNL	New Bldg 177 Wet Chemistry Laboratory Replacement Building (STAR) (formerly New Wet Chemistry Laboratory Replacement Building: New Construction)	As originally notified			19,000	19,000	25,000	1,000	0	1,000	24,000	0	0	0	0	0	0
							50%		NA	NA	FY2024	NA	NA	FY2024					
Inst	Inst	NNSS	Area 6 Shaker Plant Installation	As originally notified			5,600	5,600	5,600	380	0	380	5,220	0	0	0	0	0	0
							10%		NA	NA	FY 2025	NA	NA	FY 2025					
Inst	Inst	PX	JCDC Overhead tie to North Main Substation	As originally notified			7,200	7,200	7,200	500	0	500	6,700	0	0	0	0	0	0
							5%		FY 2024	FY 2024	FY 2025	FY 2024	FY 2024	FY 2025					
Inst	Inst	PX	New Environmental Sampling/ IH Facility	As originally notified			16,600	16,600	16,600	1,000	0	0	1,000	15,600	0	0	0	0	0
							100%		FY 2019	FY 2019	FY 2020	FY 2019	FY 2020	FY 2023					
Inst	Inst	PX	New Pantex Flexible Support Facility (Office)	As originally notified			15,000	15,000	15,000	2,183	15,000	0	0	0	0	0	0	0	0

			Icons		✓	✓			Original			Current							
					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
							40%		FY 2021	FY 2021	FY 2022	FY 2020	FY 2022	FY 2025					
Inst	Inst	PX	PREP Feed to North Main Substation Installation	As originally notified			15,900	23,500	23,500	1,007	1,007	0	0	22,493	0	0	0	0	0
							10%		FY 2022	NA	FY 2025	FY 2022	NA	FY 2025					
Inst	Inst	SNL	957 Manufacturing Liaison Metrology Lab (SNL NM)	Reconfiguring space in Bldg. 957 to expand lab space to accommodate 17 lab workstations.			3,200	3,200	6,000	250	250	5,750	0	0	0	0	0	0	0
							10%		FY 2022	NA	FY 2025	FY 2022	NA	FY 2025					
Inst	Inst	SNL	C940 Seismic Upgrade	Add lateral structural strengthening/foundation supports on Bldg. C940.			4,500	4,500	6,200	200	200	4,300	1,700	0	0	0	0	0	0
							10%		FY 2022	NA	FY 2025	FY 2023	NA	FY 2025					
Inst	Inst	SNL	C910 Seismic Resilience Upgrade	The purpose of this project is to perform seismic upgrades/foundation supports on Building C910			4,300	4,300	5,800	200	0	200	5,600	0	0	0	0	0	0
							6%		FY 2020	FY 2020	FY 2021	FY 2020	FY 2022	FY 2029					
Inst	Inst	SNL	New Kauai Test Facility (KTF) Administrative Operations Support Office Building	As originally notified			18,000	18,000	28,500	1,600	1,600	0	0	0	26,900	0	0	0	0
							3%		FY 2022	NA	FY 2025	FY 2022	NA	FY 2025					
Inst	Inst	SNL	Purchase & Install New Fuel Tank Farm	As originally notified			6,005	6,005	6,000	455	455	5,545	0	0	0	0	0	0	0
							100%		FY 2020	FY 2021	FY 2023	FY 2020	FY 2021	FY 2024					
Inst	Inst	SNL	SNL/CA New Limited Area Multi-Program Secure Office Building	As originally notified			18,500	19,700	19,700	1,104	19,700	0	0	0	0	0	0	0	0
					✓		0%		FY 2025	FY 2025	FY 2027	FY 2025	FY 2025	FY 2027					

			Icons		✓	✓			Original			Current							
					New Notif.	Auth. - Con. Design	Percent Complete		Project Start	Design Complete	Constr. Complete	Project Start	Design Complete	Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
Inst	Inst	SNL	SNL CA - New Western Utility Corridor	Construct underground utilities (Water, Communications, Power) and electrical distribution on the develop-able western portion of campus to support planned facilities.			28,606	NA	28,606	1,330	0	0	0	1,330	27,276	0	0	0	0
							3%		NA	NA	FY2024	FY 2023	FY 2024	FY 2025					
Inst	Inst	SNL	SNL NM - EST Power and Communications to Ranges at 9920	As originally notified			5,760	5,760	5,760	250	0	250	5,510	0	0	0	0	0	0
							7%		FY 2024	FY 2024	FY 2026	FY 2023	FY 2024	FY 2026					
Inst	Inst	SNL	SNL NM - New Thunder Range EST Site Office	As originally notified			13,000	13,000	13,000	250	0	0	250	12,750	0	0	0	0	0
							9%		FY 2022	NA	FY 2025	FY 2022	NA	FY 2025					
Inst	Inst	SNL	SNL-NM - Bldg. 895 Physical Security Laboratory Addition	As originally notified			6,500	6,500	6,500	650	650	5,850	0	0	0	0	0	0	0
							40%		FY 2022	FY 2023	NA	FY 2022	NA	FY 2024					
Inst	Inst	SNL	SNL NM Radio Frequency Facility/Bldg 872 - West SCIF Upgrade	As originally notified			6,400	9,967	9,967	230	230	6,170	3,567	0	0	0	0	0	0
							5%		FY 2023	FY 2023	FY 2024	FY 2023	FY 2024	FY 2025					
Inst	Inst	Y12	Building 9103 Revitalization	As originally notified			13,100	13,100	13,100	2,000	0	2,000	11,100	0	0	0	0	0	0
							10%		FY 2023	FY2023	FY2024	FY 2023	FY2023	FY 2025					
Inst	Inst	Y12	9731 Training Center Revitalization	Refurbishing building to meet ADA requirements (restrooms, break room, office spaces). Reconfiguring interior space to dedicated training facility.			3,600	3,600	9,600	360	360	3,000	6,000	0					

			Icons		✓ New Notif.	✓ Auth. - Con. Design	Percent Complete		Original Project Start	Original Design Complete	Original Constr. Complete	Current Project Start	Current Design Complete	Current Constr. Complete					
Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
Inst	**Inst**			**Inst. TOTAL**			**NA**	**NA**	**NA**	**NA**	**NA**	**55,742**	**158,485**	**240,895**	**100,918**	**27,025**	**38,034**	**32,431**	**NA**

Institutional Major Item of Equipment (MIE)
($K)

Appr	Program	Site	Project Title	Project Description			Original TEC	Previous TEC	Current TEC	Current Constr. Design	Prior Years	FY 2023 Enacted	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
Inst	Inst	LLNL	Tuolumne (formerly Unclassified El Capitan-like System (ATS-4))[a]	Unclassified IT system hardware			30,000	NA	30,000	-	0	0	6,000	6,000	6,000	6,000	6,000	0	0
Inst	**Inst**		**MIE**	**Inst. TOTAL**			**NA**	**NA**	**NA**	**NA**	**NA**	**-**	**6,000**	**6,000**	**6,000**	**6,000**	**6,000**	**-**	**NA**

[a] NNSA will utilize lease-to-purchase contracts (also referred to as lease-to-own (LTO) for Commodity Technology and Advanced Technology Systems, visualization cluster, storage systems, and other HPC procurements when such contracts are found to be in the best programmatic and financial value to the government. ASC and DNN R&D funds the remainder of costs for this MIE.

Abbreviations:

*State Abbreviations are standard UPSP codes
BL – Bettis Atomic Power Laboratory
DNN – Defense Nuclear Nonproliferation
DNS – Defense Nuclear Security
I&O - Infrastructure and Operations
Inst – Indirect funded Institutional (not an appropriation)
IT/Cyber - Information Technology and Cybersecurity
GMS - Global Material Security
HQ – DOE Headquarters
KCNSC – Kansas City National Security Campus
KL – Kenneth A. Kesselring Site, Naval Nuclear Laboratory
LAFO – Los Alamos Field Office
LANL – Los Alamos National Laboratory
LFO – Livermore Field Office
LLNL – Lawrence Livermore National Laboratory
MMM - Material Management and Minimization
NA – Not Applicable
NCTIR - Nuclear Counterterrorism and Incident Response Program
NNSS – Nevada National Security Site
NPAC - Nonproliferation and Arms Control
NR – Naval Reactors
NRF – Naval Reactors Facility
ORNL – Oak Ridge National Laboratory
PM – Production Modernization
PNNL – Pacific Northwest National Laboratory
PX – Pantex
R&D - Research and Development (DNN)
SM – Stockpile Management
SNL – Sandia National Laboratories
SRFO - Savannah River Field Office
SRS – Savannah River Site
SRT&E - Stockpile Research, Technology, and Engineering
STA – Secure Transportation Asset
TEC – Total Estimated Cost
WA – Weapons Activities
Y-12 – Y-12 National Security Complex

NNSA Fiscal Year 2023 Support Service Contract FTE and Obligations NDAA Reporting

"…With respect to the most recent fiscal year for which data is available— the number of service support contracts of the Administration" – Reporting for FY 2023

The following tables provide information required by SEC. 3241A. paragraph (c)(2)(A), (B), (D) and (E). The tables do not address paragraph (c)(2)(C) "the number of full-time equivalent contractor employees described in subparagraph (B) that have been employed under such a contract for a period greater than two years". NNSA has been transparent in its budget justification materials citing data limitations that prevent accurate, reliable reporting of this information. NNSA does not have access or privy to contractor personnel systems and collecting and reporting such data could run counter to regulations/statutes regarding employer/employee relationships. In this case, the vendor, not NNSA, is the employer and we must avoid any activities that would give the appearance of attempting to manage or oversee contractor employees or staffing. *NNSA will, however, upon request, meet with congressional staff on ways to further enhance the reported data to meet their needs.*

Since inception in NDAA 2016, the Annual Service Support Contractor (SSC) Summary tables include Technical and Management (professional) support service contracts and exclude the following services: Management and Operating contracts, contracts for housekeeping, custodial, physical security, IT helpline, maintenance, and facilities maintenance.

The total number of unique SSC active during FY 2023 was 181, with 1,408 contractor Full Time Equivalents (FTEs) reported, and over $376,091,137 in obligations for the identified SSC during FY 2023.

Table 1	Summary of NDAA Support Service Contracts FTEs and Obligations for All Active Contracts during FY23						
Awardee Name / Vendor Name	Contract/Order Number	Fund Description	Note	Expired or Follow-On Contract/Order Number	Total FY 23 Obligations	Total FTEs for Active Contracts [1]	Total FTEs for Expired Contracts [2]
ACCENTURE FEDERAL SERVICES LLC	89233120FNA000082	Weapons Activities (WA) Primary Fund (was TC			$ 810,000.00	13	0
	89233120FNA000082 Total				$ 810,000.00	13	0
	89233123FNA000112	Defense Nuclear Nonproliferation (DNN) Prim			$ 2,257,358.55	8	0
	89233123FNA000112 Total				$ 2,257,358.55	8	0
ADVANCED MANAGEMENT STRATEGIES GRO	89233120FNA400258	Weapons Activities Program Direction			$ 1,899,181.00	21	0
	89233120FNA400258 Total				$ 1,899,181.00	21	0
ALVAREZ LLC	89233119FNA000049	Weapons Activities (WA) Primary Fund (was TC			$ -	7	0
	89233119FNA000049 Total				$ -	7	0
AMAZON WEB SERVICES LLC	89233123FNA400556	Weapons Activities (WA) Primary Fund (was TC			$ 151,000.00	4	0
	89233123FNA400556 Total				$ 151,000.00	4	0
AMYX, INC.	89233123FNA400502	Weapons Activities (WA) Primary Fund (was TC			$ 3,559,836.00	16	0
	89233123FNA400502 Total				$ 3,559,836.00	16	0
APOGEE GROUP, LLC	89233118CNA000056	Defense Nuclear Nonproliferation (DNN) Prim			$ -	1	0
	89233118CNA000056 Total				$ -	1	0
BANDA GROUP INTERNATIONAL,LLC	89233119CNA000066	Weapons Activities (WA) Primary Fund (was TC			$ 751,000.00	8	0
	89233119CNA000066 Total				$ 751,000.00	8	0
BETTERUP, INC.	89233121CNA000207	Federal Salaries and Expenses Primary Fund			$ 300,000.00	0	0
	89233121CNA000207 Total				$ 300,000.00	0	0
BUILDING PEOPLE, LLC, THE	89233122FNA000102	Defense Nuclear Nonproliferation (DNN) Prim			$ 1,119,708.00	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 824,133.38	9	0
	89233122FNA000102 Total				$ 1,943,841.38	9	0
CE2 CORPORATION INC	89233122FNA400408	Federal Salaries and Expenses Primary Fund			$ 1,050,470.70	7	0
	89233122FNA400408 Total				$ 1,050,470.70	7	0
	89233122FNA400425	Federal Salaries and Expenses Primary Fund			$ 86,915.44	3	0
	89233122FNA400425 Total				$ 86,915.44	3	0
CHENEGA PROFESSIONAL & TECHNICAL SERV	89233119CNA000081	Weapons Activities (WA) Primary Fund (was TC			$ 3,539,994.40	10	0
	89233119CNA000081 Total				$ 3,539,994.40	10	0
	89233122FNA400406	Defense Nuclear Nonproliferation (DNN) Prim			$ 205,130.41	0	0
		Federal Salaries and Expenses Primary Fund			$ 1,123,300.00	0	0
		WA FY 2009 War Supplemental (P.L. 111-32 FY0			$ -	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 991,241.27	19	0
		Weapons Activities Program Direction			$ 47,112.80	0	0
	89233122FNA400406 Total				$ 2,366,784.48	19	0
COGENT SECURITY CONSULTING LLC	89233119FNA400197	Federal Salaries and Expenses Primary Fund			$ 30,000.00	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 722,774.84	4	0
	89233119FNA400197 Total				$ 752,774.84	4	0
COVENANT PARK INTEGRATED INITIATIVES	89233121CNA000187	Defense Nuclear Nonproliferation (DNN) Prim			$ 1,848,702.49	0	0
	89233121CNA000187 Total				$ 1,848,702.49	0	0
CRITERION SYSTEMS, INC.	89233122FNA400423	Weapons Activities (WA) Primary Fund (was TC	Expired requirement with a follow-on sta	89233123FNA400499	$ -	0	11
	89233122FNA400423 Total				$ -	0	11
	89233122FNA400464	Weapons Activities (WA) Primary Fund (was TC	Expired requirement with a follow-on sta	89233123FNA400499	$ 368,840.00	0	30
	89233122FNA400464 Total				$ 368,840.00	0	30
CYBERSTAR, LLC	89233122FNA400492	Weapons Activities (WA) Primary Fund (was TC			$ 5,704,984.78	15	0
	89233122FNA400492 Total				$ 5,704,984.78	15	0
	89233122FNA400493	Weapons Activities (WA) Primary Fund (was TC			$ 3,813,867.38	16	0
	89233122FNA400493 Total				$ 3,813,867.38	16	0

Table 1	Summary of NDAA Support Service Contracts FTEs and Obligations for All Active Contracts during FY23						
Awardee Name / Vendor Name	Contract/Order Number	Fund Description	Note	Expired or Follow-On Contract/Order Number	Total FY 23 Obligations	Total FTEs for Active Contracts [1]	Total FTEs for Expired Contracts [2]
DELOITTE CONSULTING LLP	89233121FNA000091	Federal Salaries and Expenses Primary Fund			$ 69,000.00	3	0
	89233121FNA000091 Total				$ 69,000.00	3	0
DIGON SYSTEMS, LLC	89233120CNA000146	Weapons Activities (WA) Primary Fund (was TC			$ 1,055,181.00	13	0
	89233120CNA000146 Total				$ 1,055,181.00	13	0
EUCLID TECHLABS, LLC	89233121CNA000209	Defense Nuclear Nonproliferation (DNN) Prim			$ -	0	0
	89233121CNA000209 Total				$ -	0	0
FEASIBILITY RESEARCH GROUP OHIO LLC	89233122FNA400435	Weapons Activities (WA) Primary Fund (was TC			$ -	0	0
	89233122FNA400435 Total				$ -	0	0
	89233123FNA400545	Weapons Activities (WA) Primary Fund (was TC			$ 8,634.00	0	0
	89233123FNA400545 Total				$ 8,634.00	0	0
GARTNER, INC.	89233120FNA400298	Weapons Activities (WA) Primary Fund (was TC			$ 205,030.00	2	0
	89233120FNA400298 Total				$ 205,030.00	2	0
	89233123FNA400498	Federal Salaries and Expenses Primary Fund			$ 186,928.70	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 3,150,867.14	2	0
	89233123FNA400498 Total				$ 3,337,795.84	2	0
	89233123FNA400561	Federal Salaries and Expenses Primary Fund			$ 70,260.00	0	0
	89233123FNA400561 Total				$ 70,260.00	0	0
GEM TECHNOLOGY INTERNATIONAL CORP	89233123FNA400505	Federal Salaries and Expenses Primary Fund			$ 449,031.55	3	0
	89233123FNA400505 Total				$ 449,031.55	3	0
GRADILLAS COURT REPORTERS INC	89233119FNA400231	Federal Salaries and Expenses Primary Fund			$ -	1	0
	89233119FNA400231 Total				$ -	1	0
HARKCON, INC	89233120FNA400313	Defense Nuclear Nonproliferation (DNN) Prim			$ 2,500,000.00	17	0
		Federal Salaries and Expenses Primary Fund			$ -	0	0
	89233120FNA400313 Total				$ 2,500,000.00	17	0
	89233121FNA400339	Federal Salaries and Expenses Primary Fund			$ 540,670.60	6	0
	89233121FNA400339 Total				$ 540,670.60	6	0
	89233122FNA400443	Federal Salaries and Expenses Primary Fund			$ 3,305,802.30	21	0
	89233122FNA400443 Total				$ 3,305,802.30	21	0
HENRY L STIMSON CENTER	89233119CNA000075	Defense Nuclear Nonproliferation (DNN) Prim			$ 989,230.00	9	0
	89233119CNA000075 Total				$ 989,230.00	9	0
HTGS-CULMEN JV LLC	89233123CNA000324	Defense Nuclear Nonproliferation (DNN) Prim			$ 6,793,057.39	0	0
		Weapons Activities RW with Other Federal Age			$ 200,000.00	25	0
	89233123CNA000324 Total				$ 6,993,057.39	25	0
	89233123CNA000314	Defense Nuclear Nonproliferation (DNN) Prim			$ 3,936,583.00	15	0
	89233123CNA000314 Total				$ 3,936,583.00	15	0
HUNATEK SYSTEM SOLUTIONS LLC	89233123CNA000306	Defense Nuclear Nonproliferation (DNN) Prim			$ 4,800,081.00	5	0
	89233123CNA000306 Total				$ 4,800,081.00	5	0
HYPERION TECHNOLOGIES LLC	89233119CNA000107	Weapons Activities (WA) Primary Fund (was TC			$ 240,000.00	8	0
		Technology Transitions			$ -	0	0
	89233119CNA000107 Total				$ 240,000.00	8	0
INNOVATIVE TECHNOLOGY PARTNERSHIPS LI	89233120FNA400249	Defense Nuclear Nonproliferation (DNN) Prim			$ 850,000.00	4	0
	89233120FNA400249 Total				$ 850,000.00	4	0
	89233120FNA400264	WA Reimbursable Work with Other Federal Ag			$ -	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 7,891,609.31	74	0
		Weapons Activities RW with Other Federal Age			$ 86,407.77	0	0
	89233120FNA400264 Total				$ 7,978,017.08	74	0

Table 1	Summary of NDAA Support Service Contracts FTEs and Obligations for All Active Contracts during FY23						
Awardee Name / Vendor Name	Contract/Order Number	Fund Description	Note	Expired or Follow-On Contract/Order Number	Total FY 23 Obligations	Total FTEs for Active Contracts [1]	Total FTEs for Expired Contracts [2]
	89233122FNA400409	Weapons Activities (WA) Primary Fund (was TC			$ 1,505,452.00	11	0
	89233122FNA400409 Total				$ 1,505,452.00	11	0
	DT0014072	Federal Salaries and Expenses Primary Fund			$ (27,637.01)	2	0
	DT0014072 Total				$ (27,637.01)	2	0
	89233123FNA400524	Defense Nuclear Nonproliferation (DNN) Prim			$ 2,520,365.00	2	0
	89233123FNA400524 Total				$ 2,520,365.00	2	0
	89233123FNA400515	Federal Salaries and Expenses Primary Fund			$ 320,000.00	0	0
	89233123FNA400515 Total				$ 320,000.00	0	0
INTERNATIONAL SERVICES AND ADVISORS IN	NA0003742	Defense Nuclear Nonproliferation (DNN) Prim			$ -	5	0
	NA0003742 Total				$ -	5	0
INTUITIVE INFORMATION SYSTEMS TECHNOI	89233122FNA400419	Defense Nuclear Nonproliferation (DNN) Prim			$ 1,285,424.00	4	0
		Ukraine Supplemental Appropriations Act, 202			$ 501,374.00	0	0
	89233122FNA400419 Total				$ 1,786,798.00	4	0
JGMS GOVERNMENT SERVICES, LLC	89233118FNA400056	Weapons Activities (WA) Primary Fund (was TC			$ 257,145.22	7	0
	89233118FNA400056 Total				$ 257,145.22	7	0
	89233118FNA400094	Federal Salaries and Expenses Primary Fund			$ -	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 52,000.00	1	0
	89233118FNA400094 Total				$ 52,000.00	1	0
	89233122FNA400415	Defense Nuclear Nonproliferation (DNN) Prim			$ 324,649.00	3	0
	89233122FNA400415 Total				$ 324,649.00	3	0
	89233122FNA400417	Federal Salaries and Expenses Primary Fund			$ 491,889.20	6	0
	89233122FNA400417 Total				$ 491,889.20	6	0
	89233122FNA400434	Federal Salaries and Expenses Primary Fund			$ 102,164.26	2	0
	89233122FNA400434 Total				$ 102,164.26	2	0
	89233122FNA400439	Federal Salaries and Expenses Primary Fund			$ -	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 802,677.68	3	0
	89233122FNA400439 Total				$ 802,677.68	3	0
	89233122FNA400473	Federal Salaries and Expenses Primary Fund			$ 152,669.00	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 300,000.00	4	0
	89233122FNA400473 Total				$ 452,669.00	4	0
	BP0005948	Federal Salaries and Expenses Primary Fund			$ -	0	0
	BP0005948 Total				$ -	0	0
	89233120FNA400246	WA Reimbursable Work with Non-Federal Enti			$ -	2	0
	89233120FNA400246 Total				$ -	2	0
JOHN HOPKINS UNIVERSITY APPLIED PHYSIC	89233123CNA000312	Defense Nuclear Nonproliferation (DNN) Prim			$ 373,587.00	1	0
	89233123CNA000312 Total				$ 373,587.00	1	0
LINK TECHNOLOGIES INC	89233120FNA400317	WA Reimbursable Work with Other Federal Ag			$ 1,750,639.00	19	0
		Weapons Activities (WA) Primary Fund (was TC			$ 1,414,000.00	0	0
	89233120FNA400317 Total				$ 3,164,639.00	19	0
LONGENECKER AND ASSOCIATES, INC	89233118FNA400112	Weapons Activities (WA) Primary Fund (was TC	Expired requirement with a follow-on sta	89233122FNA000107	$ (874,564.01)	0	0
	89233118FNA400112 Total				$ (874,564.01)	0	0
	89233119FNA400224	Defense Nuclear Nonproliferation (DNN) Prim			$ 1,886,361.00	3	0
	89233119FNA400224 Total				$ 1,886,361.00	3	0
	89233122FNA000107	Weapons Activities (WA) Primary Fund (was TC	Follow-on for FY23 expired contract.	89233118FNA400112	$ 11,669,788.55	21	0
	89233122FNA000107 Total				$ 11,669,788.55	21	0
	89233122FNA000108	Federal Salaries and Expenses Primary Fund			$ 19,179.75	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 100,000.00	1	0
	89233122FNA000108 Total				$ 119,179.75	1	0

Table 1	Summary of NDAA Support Service Contracts FTEs and Obligations for All Active Contracts during FY23						
Awardee Name / Vendor Name	Contract/Order Number	Fund Description	Note	Expired or Follow-On Contract/Order Number	Total FY 23 Obligations	Total FTEs for Active Contracts [1]	Total FTEs for Expired Contracts [2]
LTD GLOBAL, LLC	89233118CNA000052	Federal Salaries and Expenses Primary Fund			$ 383,668.00	5	0
	89233118CNA000052 Total				$ 383,668.00	5	0
	89233119CNA000062	Federal Salaries and Expenses Primary Fund			$ 72,000.00	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ -	0	0
		Defense Environmental Cleanup Primary Fund			$ 200,000.00	3	0
	89233119CNA000062 Total				$ 272,000.00	3	0
MANTECH ADVANCED SYSTEMS INTERNATIO	89233122FNA400405	Weapons Activities (WA) Primary Fund (was TC			$ 3,999,188.00	10	0
	89233122FNA400405 Total				$ 3,999,188.00	10	0
	89233123FNA400558	Weapons Activities (WA) Primary Fund (was TC			$ 5,255,050.00	15	0
	89233123FNA400558 Total				$ 5,255,050.00	15	0
MCLANE ADVANCED TECHNOLOGIES, LLC	89233121FNA400365	Weapons Activities (WA) Primary Fund (was TC			$ 5,288,685.58	38	0
	89233121FNA400365 Total				$ 5,288,685.58	38	0
MELE ASSOCIATES INC	89233118FNA000008	Weapons Activities (WA) Primary Fund (was TC			$ 685,000.00	5	0
	89233118FNA000008 Total				$ 685,000.00	5	0
	89233119FNA400200	Defense Nuclear Nonproliferation (DNN) Prima			$ 6,163,000.00	22	0
	89233119FNA400200 Total				$ 6,163,000.00	22	0
	89233120FNA400255	Weapons Activities (WA) Primary Fund (was TC			$ 17,325,107.95	42	0
	89233120FNA400255 Total				$ 17,325,107.95	42	0
	89233120FNA400260	Defense Nuclear Nonproliferation (DNN) Prima			$ 12,333,475.04	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 375,000.00	35	0
	89233120FNA400260 Total				$ 12,708,475.04	35	0
	89233121FNA400373	Defense Nuclear Nonproliferation (DNN) Prima			$ 118,000.00	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 3,595,242.34	7	0
	89233121FNA400373 Total				$ 3,713,242.34	7	0
	89233122FNA400454	Federal Salaries and Expenses Primary Fund			$ -	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 5,761,111.85	37	0
	89233122FNA400454 Total				$ 5,761,111.85	37	0
	89233122FNA400481	Federal Salaries and Expenses Primary Fund			$ -	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 4,202,803.90	20	0
	89233122FNA400481 Total				$ 4,202,803.90	20	0
	DT0013157	Weapons Activities (WA) Primary Fund (was TC			$ -	41	0
	DT0013157 Total				$ -	41	0
	89233123FNA400555	Defense Nuclear Nonproliferation (DNN) Prima	Follow-on for FY23 expired contract.	89233118FNA400091	$ 1,775,000.00	0	0
	89233123FNA400555 Total				$ 1,775,000.00	0	0
	89233123FNA400553	Defense Nuclear Nonproliferation (DNN) Prima			$ 3,999,998.00	0	0
	89233123FNA400553 Total				$ 3,999,998.00	0	0
MERRICK-SMSI JOINT VENTURE LLP	89233123CNA000311	Weapons Activities (WA) Primary Fund (was TC			$ 4,990,230.00	0	0
	89233123CNA000311 Total				$ 4,990,230.00	0	0
MONTECH INC.	89233122CNA000272	Weapons Activities (WA) Primary Fund (was TC			$ 125,000.00	0	0
		Weapons Activities Program Direction			$ 5,000.00	0	0
	89233122CNA000272 Total				$ 130,000.00	0	0
	89233123CNA000313	Federal Salaries and Expenses Primary Fund			$ 45,000.00	1	0
	89233123CNA000313 Total				$ 45,000.00	1	0
NAVARRO RESEARCH AND ENGINEERING, IN(	89233121FNA400384	Defense Nuclear Nonproliferation (DNN) Prima			$ -	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 808,556.00	1	0
	89233121FNA400384 Total				$ 808,556.00	1	0
NEW TECH SOLUTIONS INC	89233123FNA400503	Weapons Activities (WA) Primary Fund (was TC			$ 1,380,192.37	3	0
	89233123FNA400503 Total				$ 1,380,192.37	3	0

Table 1	Summary of NDAA Support Service Contracts FTEs and Obligations for All Active Contracts during FY23						
Awardee Name / Vendor Name	Contract/Order Number	Fund Description	Note	Expired or Follow-On Contract/Order Number	Total FY 23 Obligations	Total FTEs for Active Contracts [1]	Total FTEs for Expired Contracts [2]
PARSONS GOVERNMENT SERVICES INC	89233118FNA000016	Weapons Activities (WA) Primary Fund (was TC			$ 39,475.00	1	0
	89233118FNA000016 Total				$ 39,475.00	1	0
	89233118FNA000022	Federal Salaries and Expenses Primary Fund			$ -	0	0
	89233118FNA000022 Total				$ -	0	0
	89233119FNA000044	Federal Salaries and Expenses Primary Fund	Expired requirement with a follow-on sta	89233123FNA000117	$ -	1	0
	89233119FNA000044 Total				$ -	1	0
	89233119FNA000045	Federal Salaries and Expenses Primary Fund			$ (584.89)	0	0
	89233119FNA000045 Total				$ (584.89)	0	0
	89233119FNA000046	Federal Salaries and Expenses Primary Fund	Expired requirement with a follow-on sta	89233123FNA000111	$ (81,539.77)	0	1
	89233119FNA000046 Total				$ (81,539.77)	0	1
	89233119FNA000050	Defense Nuclear Nonproliferation (DNN) Prim			$ (586,359.50)	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 250,000.00	2	0
	89233119FNA000050 Total				$ (336,359.50)	2	0
	89233119FNA000051	Weapons Activities (WA) Primary Fund (was TC	Expired requirement with a follow-on sta	89233123FNA000115	$ (19,473.76)	0	6
	89233119FNA000051 Total				$ (19,473.76)	0	6
	89233119FNA000057	Federal Salaries and Expenses Primary Fund			$ -	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ -	1	0
	89233119FNA000057 Total				$ -	1	0
	89233120FNA000067	Defense Nuclear Nonproliferation (DNN) Prim	Expired requirement with a follow-on sta	89233123FNA000109	$ -	0	0
		Weapons Activities (WA) Primary Fund (was TC	Expired requirement with a follow-on sta	89233123FNA000109	$ 582,348.38	1	0
	89233120FNA000067 Total				$ 582,348.38	1	0
	89233120FNA000070	Weapons Activities (WA) Primary Fund (was TC	Expired requirement with a follow-on sta	89233123FNA000121	$ -	0	5
	89233120FNA000070 Total				$ -	0	5
	89233120FNA000074	Federal Salaries and Expenses Primary Fund	Expired requirement with a follow-on sta	89233123FNA000132	$ -	0	0
		Weapons Activities (WA) Primary Fund (was TC	Expired requirement with a follow-on sta	89233123FNA000132	$ 105,500.00	0	1
	89233120FNA000074 Total				$ 105,500.00	0	1
	89233120FNA000075	Federal Salaries and Expenses Primary Fund			$ -	0	0
	89233120FNA000075 Total				$ -	0	0
	89233121FNA000085	Weapons Activities (WA) Primary Fund (was TC			$ -	1	0
	89233121FNA000085 Total				$ -	1	0
	89233121FNA000095	Federal Salaries and Expenses Primary Fund	Expired requirement with a follow-on sta	89233123FNA000122	$ -	0	1
	89233121FNA000095 Total				$ -	0	1
	89233122FNA000096	Weapons Activities (WA) Primary Fund (was TC	Expired requirement with a follow-on sta	89233123FNA000126	$ 2,559,488.00	0	11
	89233122FNA000096 Total				$ 2,559,488.00	0	11
	89233122FNA000098	Weapons Activities (WA) Primary Fund (was TC			$ (475,052.74)	1	0
	89233122FNA000098 Total				$ (475,052.74)	1	0
	89233122FNA000101	Weapons Activities (WA) Primary Fund (was TC			$ (9,038.47)	0	0
	89233122FNA000101 Total				$ (9,038.47)	0	0
	89233123FNA000114	IIJA (PL 117-58) for CED			$ 2,400,000.00	3	0
	89233123FNA000114 Total				$ 2,400,000.00	3	0
	DT0011750	Defense Nuclear Nonproliferation (DNN) Prim			$ (11,352.26)	0	0
		Transfers Activity - DOEPAC Phase II (Admin) (v			$ (1,372.53)	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ (113,818.63)	0	0
	DT0011750 Total				$ (126,543.42)	0	0
	89233123FNA000123	Weapons Activities (WA) Primary Fund (was TC			$ 143,366.78	0	0
	89233123FNA000123 Total				$ 143,366.78	0	0
	89233123FNA000109	Defense Nuclear Nonproliferation (DNN) Prim	Follow-on for FY23 expired contract.	89233120FNA000067	$ 55,011.58	0	0
		Weapons Activities (WA) Primary Fund (was TC	Follow-on for FY23 expired contract.	89233120FNA000067	$ 281,746.20	2	0

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Awardee Name / Vendor Name	Contract/Order Number	Fund Description	Note	Expired or Follow-On Contract/Order Number	Total FY 23 Obligations	Total FTEs for Active Contracts [1]	Total FTEs for Expired Contracts [2]
	89233123FNA000109 Total				$ 336,757.78	2	0
	89233123FNA000126	Weapons Activities (WA) Primary Fund (was TC	Follow-on for FY23 expired contract.	89233122FNA000096	$ 7,556,757.88	0	0
	89233123FNA000126 Total				$ 7,556,757.88	0	0
	89233123FNA000116	Defense Nuclear Nonproliferation (DNN) Prim			$ 750,000.00	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 1,940,000.00	2	0
	89233123FNA000116 Total				$ 2,690,000.00	2	0
	DT0012626	Weapons Activities (WA) Primary Fund (was TC			$ (15,683.80)	0	0
	DT0012626 Total				$ (15,683.80)	0	0
	89233123FNA000115	Weapons Activities (WA) Primary Fund (was TC	Follow-on for FY23 expired contract.	89233119FNA000051	$ 6,798,000.00	3	0
	89233123FNA000115 Total				$ 6,798,000.00	3	0
	89233123FNA000117	Weapons Activities (WA) Primary Fund (was TC	Follow-on for FY23 expired contract.	89233119FNA000044	$ 2,556,136.74	2	0
	89233123FNA000117 Total				$ 2,556,136.74	2	0
	89233123FNA000125	Weapons Activities (WA) Primary Fund (was TC			$ 1,500,000.00	0	0
	89233123FNA000125 Total				$ 1,500,000.00	0	0
	89233123FNA000132	Weapons Activities (WA) Primary Fund (was TC	Follow-on for FY23 expired contract.	89233120FNA000074	$ 250,000.00	0	0
	89233123FNA000132 Total				$ 250,000.00	0	0
	89233123FNA000121	Weapons Activities (WA) Primary Fund (was TC	Follow-on for FY23 expired contract.	89233120FNA000070	$ 969,596.63	1	0
	89233123FNA000121 Total				$ 969,596.63	1	0
	89233123FNA000124	Weapons Activities (WA) Primary Fund (was TC			$ 2,129,470.61	0	0
	89233123FNA000124 Total				$ 2,129,470.61	0	0
	89233123FNA000111	Federal Salaries and Expenses Primary Fund	Follow-on for FY23 expired contract.	89233119FNA000046	$ 136,695.56	0	0
		Weapons Activities (WA) Primary Fund (was TC	Follow-on for FY23 expired contract.	89233119FNA000046	$ 1,666,590.84	4	0
	89233123FNA000111 Total				$ 1,803,286.40	4	0
	89233123FNA000122	Federal Salaries and Expenses Primary Fund	Follow-on for FY23 expired contract.	89233121FNA000095	$ 372,423.78	0	0
	89233123FNA000122 Total				$ 372,423.78	0	0
PERATON INC.	89233119CNA000083	WA Reimbursable Work with Non-Federal Enti			$ 523,215.00	2	0
	89233119CNA000083 Total				$ 523,215.00	2	0
PERIKIN ENTERPRISES, LLC	89233118CNA000039	Federal Salaries and Expenses Primary Fund			$ 55,694.84	1	0
	89233118CNA000039 Total				$ 55,694.84	1	0
	89233122FNA400448	Defense Nuclear Nonproliferation (DNN) Prim			$ 1,979,760.32	13	0
	89233122FNA400448 Total				$ 1,979,760.32	13	0
	89233122FNA400453	Defense Nuclear Nonproliferation (DNN) Prim			$ 1,490,783.81	11	0
	89233122FNA400453 Total				$ 1,490,783.81	11	0
	89233123FNA400514	Additional Ukraine Supplemental Appropriatio			$ 572,025.45	3	0
	89233123FNA400514 Total				$ 572,025.45	3	0
POWDER RIVER INDUSTRIES, LLC	89233123CNA000302	Weapons Activities (WA) Primary Fund (was TC			$ 8,290,588.00	9	0
	89233123CNA000302 Total				$ 8,290,588.00	9	0
PROJECT ENHANCEMENT CORPORATION	89233121FNA400380	Defense Nuclear Nonproliferation (DNN) Prim			$ 21,633,261.52	39	0
		Additional Ukraine Supplemental Appropriatio			$ 5,260,939.77	0	0
	89233121FNA400380 Total				$ 26,894,201.29	39	0
	89233121FNA400393	Federal Salaries and Expenses Primary Fund			$ 1,174,720.75	5	0
	89233121FNA400393 Total				$ 1,174,720.75	5	0
	89233120FNA400303	Weapons Activities Program Direction			$ 1,954,293.65	8	0
	89233120FNA400303 Total				$ 1,954,293.65	8	0
RADUS SOFTWARE LLC	89233121CNA000189	Weapons Activities (WA) Primary Fund (was TC			$ 300,000.00	6	0
	89233121CNA000189 Total				$ 300,000.00	6	0
RED RIVER COMPUTER CO., INC.	89233120FNA400304	Weapons Activities (WA) Primary Fund (was TC			$ -	1	0
	89233120FNA400304 Total				$ -	1	0
REGAN TECHNOLOGIES CORPORATION	89233123FNA400520	Weapons Activities (WA) Primary Fund (was TC			$ 9,736,466.00	0	0
	89233123FNA400520 Total				$ 9,736,466.00	0	0

Table 1	Summary of NDAA Support Service Contracts FTEs and Obligations for All Active Contracts during FY23						
Awardee Name / Vendor Name	Contract/Order Number	Fund Description	Note	Expired or Follow-On Contract/Order Number	Total FY 23 Obligations	Total FTEs for Active Contracts [1]	Total FTEs for Expired Contracts [2]
RHINOCORPS LTD CO	89233121CNA000219	Weapons Activities (WA) Primary Fund (was TC			$ 1,767,986.17	12	0
	89233121CNA000219 Total				$ 1,767,986.17	12	0
RIVIDIUM INC.	89233121FNA400361	Federal Salaries and Expenses Primary Fund	Expired requirement with a follow-on sta	89233123FNA400539	$ 1,075,211.89	0	22
	89233121FNA400361 Total				$ 1,075,211.89	0	22
	89233123FNA400539	Federal Salaries and Expenses Primary Fund	Follow-on for FY23 expired contract.	89233121FNA400361	$ 412,816.52	10	0
	89233123FNA400539 Total				$ 412,816.52	10	0
SHOREPOINT INC	89233122FNA400483	Weapons Activities (WA) Primary Fund (was TC			$ 4,075,360.53	9	0
	89233122FNA400483 Total				$ 4,075,360.53	9	0
SIGMA SCIENCE INC	89233119FNA400186	Weapons Activities (WA) Primary Fund (was TC			$ 203,198.62	1	0
	89233119FNA400186 Total				$ 203,198.62	1	0
	89233119FNA400195	Federal Salaries and Expenses Primary Fund			$ -	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 238,539.64	1	0
	89233119FNA400195 Total				$ 238,539.64	1	0
	89233119FNA400205	Federal Salaries and Expenses Primary Fund			$ (8,658.47)	7	0
	89233119FNA400205 Total				$ (8,658.47)	7	0
	89233121FNA400336	Weapons Activities (WA) Primary Fund (was TC			$ 1,451,610.00	10	0
	89233121FNA400336 Total				$ 1,451,610.00	10	0
	89233121FNA400367	Weapons Activities (WA) Primary Fund (was TC			$ 54,413.73	1	0
	89233121FNA400367 Total				$ 54,413.73	1	0
	89233121FNA400368	Defense Nuclear Nonproliferation (DNN) Prim			$ 550,000.00	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 5,278,223.21	30	0
	89233121FNA400368 Total				$ 5,828,223.21	30	0
	89233121FNA400378	Weapons Activities (WA) Primary Fund (was TC			$ 186,295.72	1	0
	89233121FNA400378 Total				$ 186,295.72	1	0
	89233122FNA400430	Defense Nuclear Nonproliferation (DNN) Prim			$ 2,203,150.00	17	0
	89233122FNA400430 Total				$ 2,203,150.00	17	0
	89233122FNA400452	Federal Salaries and Expenses Primary Fund	Follow-on for FY23 expired contract.	DT0012586	$ 75,000.00	0	0
		Weapons Activities (WA) Primary Fund (was TC	Follow-on for FY23 expired contract.	DT0012586	$ 7,574,312.75	26	0
	89233122FNA400452 Total				$ 7,649,312.75	26	0
	89233123FNA400509	Federal Salaries and Expenses Primary Fund			$ 711,921.57	6	0
	89233123FNA400509 Total				$ 711,921.57	6	0
	89233123FNA400532	Federal Salaries and Expenses Primary Fund			$ 548,203.43	6	0
	89233123FNA400532 Total				$ 548,203.43	6	0
SOUTHWEST RESEARCH INSTITUTE	89233120CNA000127	Defense Nuclear Nonproliferation (DNN) Prim			$ 10,123,000.00	35	0
	89233120CNA000127 Total				$ 10,123,000.00	35	0
STARFIRE INDUSTRIES LLC	89233121CNA000229	Defense Nuclear Nonproliferation (DNN) Prim			$ -	0	0
	89233121CNA000229 Total				$ -	0	0
STRATIVIA LLC	89233121CNA000179	Federal Salaries and Expenses Primary Fund			$ 353,693.30	3	0
	89233121CNA000179 Total				$ 353,693.30	3	0
STREET LEGAL INDUSTRIES, INC	89233121CNA000173	Federal Salaries and Expenses Primary Fund			$ 743,009.00	6	0
	89233121CNA000173 Total				$ 743,009.00	6	0
SUMMIT EXERCISES AND TRAINING LLC	89233118FNA400091	Defense Nuclear Nonproliferation (DNN) Prim	Expired requirement with a follow-on sta	89233123FNA400555	$ 1,450,000.00	0	0
		WA Reimbursable Work with Other Federal Ag	Expired requirement with a follow-on sta	89233123FNA400555	$ 364,069.90	10	0
	89233118FNA400091 Total				$ 1,814,069.90	10	0
SYSTEMATIC MANAGEMENT SERVICES INC	89233120FNA400309	Defense Nuclear Nonproliferation (DNN) Prim			$ -	23	0
	89233120FNA400309 Total				$ -	23	0
	89233122FNA400427	Defense Nuclear Nonproliferation (DNN) Prim			$ 6,775,011.41	0	0
	89233122FNA400427 Total				$ 6,775,011.41	0	0

Table 1	Summary of NDAA Support Service Contracts FTEs and Obligations for All Active Contracts during FY23						
Awardee Name / Vendor Name	Contract/Order Number	Fund Description	Note	Expired or Follow-On Contract/Order Number	Total FY 23 Obligations	Total FTEs for Active Contracts [1]	Total FTEs for Expired Contracts [2]
TEAM B MARKETING, INC.	89233122CNA000248	Weapons Activities (WA) Primary Fund (was TC			$ 7,884,460.39	26	0
	89233122CNA000248 Total				**$ 7,884,460.39**	**26**	**0**
TECHNOMICS INC	89233118FNA400047	Federal Salaries and Expenses Primary Fund			$ 69,164.42	7	0
	89233118FNA400047 Total				**$ 69,164.42**	**7**	**0**
	89233119FNA400217	Defense Nuclear Nonproliferation (DNN) Prim	**Expired requirement with a follow-on sta**	89233123FNA400513	$ (504.45)	0	0
		Weapons Activities (WA) Primary Fund (was TC	**Expired requirement with a follow-on sta**	**89233123FNA400513**	**$ (13,655.62)**	**0**	**9**
	89233119FNA400217 Total				$ (14,160.07)	0	9
	89233120FNA400261	Defense Nuclear Nonproliferation (DNN) Prim			**$ 614,797.51**	**0**	**0**
		Weapons Activities (WA) Primary Fund (was TC			$ 4,538,037.52	18	0
	89233120FNA400261 Total				**$ 5,152,835.03**	**18**	**0**
	89233121FNA400398	Weapons Activities (WA) Primary Fund (was TC			$ 1,626,912.65	7	0
	89233121FNA400398 Total				**$ 1,626,912.65**	**7**	**0**
	89233123FNA400513	Defense Nuclear Nonproliferation (DNN) Prim	**Follow-on for FY23 expired contract.**	89233119FNA400217	$ 365,687.78	0	0
		Federal Salaries and Expenses Primary Fund	**Follow-on for FY23 expired contract.**	**89233119FNA400217**	**$ 23,863.17**	**0**	**0**
		Weapons Activities (WA) Primary Fund (was TC	**Follow-on for FY23 expired contract.**	89233119FNA400217	$ 2,872,918.13	9	0
	89233123FNA400513 Total				**$ 3,262,469.08**	**9**	**0**
	89233123FNA400519	Federal Salaries and Expenses Primary Fund			$ 1,780,821.17	8	0
	89233123FNA400519 Total				**$ 1,780,821.17**	**8**	**0**
TECHSOURCE INC	89233119FNA400223	Defense Nuclear Nonproliferation (DNN) Prim	**Expired requirement with a follow-on sta**	89233123FNA000118	$ -	0	0
		Weapons Activities (WA) Primary Fund (was TC	**Expired requirement with a follow-on sta**	**89233123FNA000118**	**$ 694,984.60**	**0**	**10**
	89233119FNA400223 Total				$ 694,984.60	0	10
	89233120FNA400310	Weapons Activities (WA) Primary Fund (was TC			**$ 2,400,000.00**	**4**	**0**
	89233120FNA400310 Total				$ 2,400,000.00	4	0
	89233120FNA400321	Federal Salaries and Expenses Primary Fund			**$ 215,000.00**	**0**	**0**
		Weapons Activities (WA) Primary Fund (was TC			$ 4,890,300.00	16	0
		WA Reimbursable Work with Non-Federal Enti			$ 909,629.00	0	0
	89233120FNA400321 Total				**$ 6,014,929.00**	**16**	**0**
	89233120FNA400322	Weapons Activities (WA) Primary Fund (was TC			$ 8,506,308.00	28	0
	89233120FNA400322 Total				**$ 8,506,308.00**	**28**	**0**
	89233121FNA400330	Weapons Activities (WA) Primary Fund (was TC			$ 2,332,250.13	5	0
	89233121FNA400330 Total				$ 2,332,250.13	5	0
	89233121FNA400357	Weapons Activities (WA) Primary Fund (was TC			**$ 5,115,475.00**	**35**	**0**
	89233121FNA400357 Total				$ 5,115,475.00	35	0
	89233121FNA400374	Weapons Activities (WA) Primary Fund (was TC			$ 2,000,000.00	4	0
	89233121FNA400374 Total				**$ 2,000,000.00**	**4**	**0**
	89233121FNA400375	Weapons Activities (WA) Primary Fund (was TC			$ 2,700,000.00	6	0
	89233121FNA400375 Total				**$ 2,700,000.00**	**6**	**0**
	89233122FNA400494	Weapons Activities (WA) Primary Fund (was TC			$ 1,450,000.00	6	0
	89233122FNA400494 Total				**$ 1,450,000.00**	**6**	**0**
TETRA TECH INC	89233119FNA400183	Weapons Activities (WA) Primary Fund (was TC			$ -	1	0
	89233119FNA400183 Total				$ -	1	0
	89233120FNA400272	Weapons Activities (WA) Primary Fund (was TC			$ 145,330.69	6	0
	89233120FNA400272 Total				$ 145,330.69	6	0
THE A R GROUP LLP	89233119FNA400174	Federal Salaries and Expenses Primary Fund			$ 51,161.44	0	0
	89233119FNA400174 Total				$ 51,161.44	0	0
THUNDERCAT TECHNOLOGY, LLC	89233123FNA400554	Weapons Activities (WA) Primary Fund (was TC			$ 2,397,634.90	0	0
	89233123FNA400554 Total				$ 2,397,634.90	0	0
TI VERBATIM CONSULTING INC.	89233121FNA400390	Federal Salaries and Expenses Primary Fund			$ 360,000.00	3	0
	89233121FNA400390 Total				$ 360,000.00	3	0

Table 1	Summary of NDAA Support Service Contracts FTEs and Obligations for All Active Contracts during FY23						
Awardee Name / Vendor Name	Contract/Order Number	Fund Description	Note	Expired or Follow-On Contract/Order Number	Total FY 23 Obligations	Total FTEs for Active Contracts [1]	Total FTEs for Expired Contracts [2]
TIBARAY, INC.	89233121CNA000226	Defense Nuclear Nonproliferation (DNN) Prim			$ -	0	0
	89233121CNA000226 Total				$ -	0	0
TIERRA RIGHT OF WAY SERVICES, LTD.	89233121PNA000112	Weapons Activities (WA) Primary Fund (was TC			$ -	2	0
	89233121PNA000112 Total				$ -	2	0
	89233122PNA000166	Weapons Activities (WA) Primary Fund (was TC			$ 91,400.00	6	0
	89233122PNA000166 Total				$ 91,400.00	6	0
TPGI CPA PLLC	89233123CNA000317	Federal Salaries and Expenses Primary Fund			$ 223,585.00	5	0
	89233123CNA000317 Total				$ 223,585.00	5	0
TUVA, LLC	NA0003424	Weapons Activities (WA) Primary Fund (was TC			$ 6,390,671.26	67	0
	NA0003424 Total				$ 6,390,671.26	67	0
VECTOR RESOURCE INC	89233120FNA400281	Weapons Activities (WA) Primary Fund (was TC			$ 1,082,500.00	5	0
	89233120FNA400281 Total				$ 1,082,500.00	5	0
	89233121FNA400328	Defense Nuclear Nonproliferation (DNN) Prim			$ 275,000.00	0	0
		Weapons Activities (WA) Primary Fund (was TC			$ 515,000.00	8	0
	89233121FNA400328 Total				$ 790,000.00	8	0
	89233121FNA400386	Weapons Activities (WA) Primary Fund (was TC			$ 1,900,000.00	8	0
	89233121FNA400386 Total				$ 1,900,000.00	8	0
	DT0012586	Federal Salaries and Expenses Primary Fund	Expired requirement with a follow-on sta	89233122FNA400452	$ (21,835.76)	0	0
		Weapons Activities (WA) Primary Fund (was TC	Expired requirement with a follow-on sta	89233122FNA400452	$ (1,387,354.94)	0	32
	DT0012586 Total				$ (1,409,190.70)	0	32
	89233123FNA000118	Defense Nuclear Nonproliferation (DNN) Prim	Follow-on for FY23 expired contract.	89233119FNA400223	$ 200,000.00	0	0
		Weapons Activities (WA) Primary Fund (was TC	Follow-on for FY23 expired contract.	89233119FNA400223	$ 1,690,000.00	10	0
	89233123FNA000118 Total				$ 1,890,000.00	10	0
	89233123FNA400549	Weapons Activities (WA) Primary Fund (was TC			$ 1,170,342.00	4	0
	89233123FNA400549 Total				$ 1,170,342.00	4	0
VMD SYSTEMS INTEGRATORS INC	89233123FNA400497	Weapons Activities (WA) Primary Fund (was TC			$ 5,115,295.96	20	0
	89233123FNA400497 Total				$ 5,115,295.96	20	0
WYANT DATA SYSTEMS, INC	89233119FNA400230	Weapons Activities (WA) Primary Fund (was TC			$ 1,662,110.40	2	0
	89233119FNA400230 Total				$ 1,662,110.40	2	0
Grand Total					$ 376,091,137.88	1408	138
[1] Active or Follow-on for FY23 expired contract.							
[2] Expired Requirement with a Follow-on starting in FY23.							
otal # of SSC Instruments Active during FY23		181					

Table 2 - Summary of Original Fund Value Categories _Total amount obligated from Individual Contracts during FY23

NNSA Support Service Contracts NDAA Annual Report on SSC (Active throughout FY 2023) Summary of Original Fund Value Categories _Total amount obligated from Individual Contracts during FY23	
Subtotals for all Fund Values Reported above for Individual Contracts	**Sum of FY23 Obligations**
Additional Ukraine Supplemental Appropriations Act, 2023 (H.R. 2617)	$5,832,965.22
Defense Environmental Cleanup Primary Fund (was Defense Facilities Closure Projects thru FY03;	$200,000.00
Defense Nuclear Nonproliferation (DNN) Primary Fund (was NS)	$103,946,957.60
Federal Salaries and Expenses Primary Fund	$17,041,679.44
IIJA (PL 117-58) for CED	$2,400,000.00
Technology Transitions	$0.00
Transfers Activity - DOEPAC Phase II (Admin) (was YY)	-$1,372.53
Ukraine Supplemental Appropriations Act, 2023 (H.R. 6833)	$501,374.00
WA FY 2009 War Supplemental (P.L. 111-32 FY09 123 STAT 1876) (was XR)	$0.00
WA Reimbursable Work with Non-Federal Entities (was 2T)	$1,432,844.00
WA Reimbursable Work with Other Federal Agencies (was 3T)	$2,114,708.90
Weapons Activities (WA) Primary Fund (was TC)	$238,429,986.03
Weapons Activities Program Direction	$3,905,587.45
Weapons Activities RW with Other Federal Agencies	$286,407.77
Grand Total	**$376,091,137.88**

Federal Salaries and Expenses

Federal Salaries and Expenses

Federal Salaries and Expenses
Proposed Appropriation Language

For National Nuclear Security Administration (NNSA) Federal Salaries and Expenses (FSE *$564,475,000)*, to remain available until September 30, *2026.* That of such amount, $17,000 shall be available for official reception and representation expenses.

Explanation of Changes

Changes to the appropriation language consist of revisions to the overall amount and the two-year period of availability. The FY 2025 Budget Request for NNSA FSE is $564,475,000, a $89,475,000 (18.8 percent) increase above the FY 2023 Enacted level for the salaries, benefits, and other expenses for 2,084 federal full-time equivalents (FTEs), 2,060 paid from FSE and 24 paid through the Working Capital Fund. This request includes $14,475,000 for up to 85 FTEs for the transfer of landlord responsibility; including primary authority, accountability, and Site stewardship from DOE Environmental Management, Savannah River Operations Office to NNSA.

Federal Salaries and Expenses
Funding

	Funding ($K)				
	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs. FY 2023 Enacted ($)	FY 2025 Request vs. FY 2023 Enacted (%)
NNSA Federal Salaries and Expenses	**491,800**	**475,000**	**564,475**	**+72,675**	**14.8%**
Use of Prior Year Balances	-16,800	+0	+0	+16,800	-100.0%
Total, NNSA Federal Salaries and Expenses	**475,000**	**475,000**	**564,475**	**+89,475**	**18.8%**

Federal Salaries and Expenses
Future Years Energy Program

	Funding ($K)				
	FY 2025 Request	FY 2026	FY 2027	FY 2028	FY 2029
NNSA Federal Salaries and Expenses	**564,475**	**610,324**	**623,344**	**636,579**	**650,157**

Mission

Provides the specialized Federal workforce who are responsive to the dynamic geopolitical environment providing programmatic direction, leadership, and oversight for the timely development and delivery of a modernized nuclear deterrent, requirements for nonproliferation and counterterrorism programs, foundational science capabilities, and recapitalization of critical aging infrastructure for the Nuclear Security Enterprise.

Funding by Object Class

Salaries and Benefits: Provides $462,552,000 for salaries and benefits for the majority of the NNSA federal staff. It does not include funding for the federal staff supporting the Weapons Activities (WA) Secure Transportation Asset program or the Naval Reactors (NR) account. The NNSA workforce consists of a diverse cadre of scientists, engineers, project and program managers, foreign affairs specialists, and highly technical support staff that perform program and project management and appropriate oversight of the national security missions related to the WA account and the Defense Nuclear (DNN) Nonproliferation account. The workforce is also comprised of mission support staff focusing on management and program analysis, contracting, security administration, miscellaneous administration, human resource management, emergency management, information technology management, budget analysis, accounting, legal services (general and patent attorney, paralegal specialist), operations research, miscellaneous clerk and assistant, congressional affairs, quality assurance, general business and industry, government information specialists, industrial hygiene, industrial property management, realty, equal employment opportunity, grants management, environmental protection specialist, safety and occupational health management, logistics management, computer engineering, records and information management, telecommunications, writing and editing, computer science, procurement clerical and technician, inventory management, financial management, psychology, safety and electrical engineering, and architecture.

NNSA staff is located throughout the United States, reflecting NNSA's work with the Nuclear Security Enterprise. The staff is geographically located in Washington, DC; Germantown, Maryland; Albuquerque, New Mexico; and at eight federal field offices: Kansas City Field Office (Missouri); Livermore Field Office (California); Los Alamos Field Office (New Mexico); Nevada Field Office (Nevada); Pantex Field Office (Texas); Y-12 Field Office (Tennessee); Sandia Field Office (New Mexico); and Savannah River Field Office (South Carolina).

Includes $14,475,000 for up to 85 FTEs for the transfer of landlord responsibility; including primary authority, accountability, and site stewardship from DOE Environmental Management, Savannah River Operations Office to NNSA. The number of FTEs dedicated to the Savannah River Field Office in the FYNSP will be based on NNSA mission priorities and requirements.

Travel: Provides $16,011,000 for travel necessary to conduct NNSA business. Domestic travel provides management oversight, public outreach, travel related to training, and national security assistance and interface between NNSA Headquarters, NNSA Field Offices, DOE laboratories and production facilities, and local governments. International travel is a key element of NNSA's nonproliferation work to share the United States' long experience in managing special nuclear materials with partners around the world to achieve international nonproliferation and counterterrorism goals.

Support Services: Includes $16,243,000 for management and professional services for headquarters support offices to achieve efficient and effective management and operation of activities and systems, including administrative support. This request transfers funding responsibility for field office support services, the Quality Management contract, and support for the NNSA Graduate Fellowship Program (NGFP) to WA and DNN. The timing of the proposed transfers may be impacted by the final FY 2024 enacted level.

Other Related Expenses: Provides $69,669,000 for the following items:

- Training: Provides $5,094,000 to train and develop our workforce. Funding will address the current and future workforce development needs, cultivate a healthy work culture that empowers employee engagement, and builds a cadre of professionals to lead America's Nuclear Security Enterprise. Training includes valuable learning individual learning activities for NNSA Headquarter and Field Office employees, and corporate learning, employee engagement, and development programs that are managed by the NNSA's Chief Learning Officer Provides $5,094,000 to train and develop our workforce. Funding will address the current and future workforce development needs, cultivate a healthy work culture that empowers employee engagement, and builds a cadre of professionals to lead America's Nuclear Security Enterprise. Programs executed through the utilization of these funds includes the NNSA Technical Qualification Program, leadership development programs at the executive, managerial, and supervisor level, academic degree programs, career paths, organizational development, rotations, coaching and mentoring, interactive learning management system, and other learning activities. A portion of the funds are allocated to the organizations to support activities identified on employees Individual Development Plans. This funding does not include training for the federal staff supporting the WA Secure Transportation Asset program or the Naval Reactors account which are supported by separate Program Direction accounts.
- Space and Occupancy: Provides $17,705,000 to support office space costs at headquarters and operations costs at the field offices. Consistent with the FY 2024 Request, funding for maintenance and recapitalization projects at the Field Offices are funded from Weapons Activities, Infrastructure and Operations.
- Working Capital Fund: Provides $38,868,000 for FSE's contribution to the Department of Energy's (DOE) Working Capital Fund (WCF). The FSE contribution includes funding for DOE's overseas presence for administrative and operational support to Departmental personnel. The Department's overseas presence business line funds 24 FTEs, including 22 DOE FTES in 21 diplomatic missions and 2 Headquarters FTEs for transition to and from overseas locations. This supports both federal employees and locally employed staff and reimburses the Department of State for International Cooperative Administrative Support Services and Capital Security Cost Sharing charges. The Department's WCF budget chapter included in Volume 2 provides details on all programs funded through the WCF. There are differences

between NNSA's budget for WCF and the amounts allocated to NNSA in the WCF budget included in Volume 2. These differences will be addressed during execution of the FY 2024 and FY 2025 budgets.

- Other Expenses: Provides $8,002,000 in funding for activities required for NNSA's federal personnel, including field site investigations in coordination with the DOE General Counsel, headquarters security investigations costs, other miscellaneous procurements, such as potential settlements; and funding for Reception and Representation funds ($17,000). Other Expenses also includes funding for Federal management of contract and procurement services at National Energy Technology Laboratory (NETL) to access resources that provide specialized skill sets, unique industry knowledge, customized tools, and niche experience working on technical supply chain and production site issues for weapons and defense manufacturing clients. NETL federal employees who manage this contract or provide federal purchasing support are reimbursed for time and expenses expended.

FY 2023 Key Accomplishments

NNSA continued to expand recruitment and retention efforts in coordination with M&O partners for top talent in the sciences, engineering, and skilled crafts and trades. This has resulted in the highest federal staffing levels since 2013. In FY 2023, NNSA recruited 213 federal employees from outside NNSA. Additionally, NNSA continues to develop the next-generation workforce through its Minority Serving Institutions Partnership Program (MSIPP) and Tribal Educational Partnership Program, which are funded in the WA account. These programs, managed by FSE funded federal staff, fund 35 awards consisting of 54 Minority Serving Institutions (MSIs), including 19 Historically Black Colleges and Universities, 26 Hispanic Serving Institutions, 8 Tribal Colleges and Universities, and 1 Predominantly Black Institution, at 14 DOE/NNSA Nuclear Security Enterprise sites. Additionally, through the implementation of the NNSA MSI Intern Program, students receive paid internships, and are provided the opportunity to learn about the NNSA mission through direct experience across the Nuclear Security Enterprise. The program supported 96 MSI interns in FY 2023.

Highlights of the FY 2025 Request

The FY 2025 Request supports a federal staff of 2,084 FTEs providing appropriate oversight to ensure NNSA can meet growing mission requirements and commitments including modernizing the nuclear deterrent, recapitalizing the aging infrastructure, and continuing to meet the requirements of nonproliferation and counterterrorism programs. This request includes $14,475,000 for up to 85 FTEs for landlord responsibility; including primary authority, accountability, and site stewardship from DOE Environmental Management (EM), Savannah River Operations Office to NNSA. The transfer was deemed necessary given the steadily increasing NNSA mission requirements at the Savannah River Site and the concurrent progression of the EM clean-up mission toward a defined end-state. The number of FTEs dedicated to the Savannah River Field Office in the FYNSP will be based on NNSA mission priorities and requirements.

Outyear Priorities and Assumptions

The NNSA Office of Cost Estimating and Program Evaluation has begun the NNSA Strategic Workforce Planning initiative to identify workload drivers and workforce distribution across the NNSA to plan and program federal FTEs into the FY2026-2030 FYNSP Program. Initial results indicated a need for additional FTEs over the NNSA staffing plan. Once complete, the Strategic Workforce Plan will be used to inform FY 2025 FTE allocations by mission area. In addition, NNSA is committed to fill current and future positions and will use a variety of methods to grow and shape the professional staff including recruitment events and excepted service hiring authority. NNSA will continue to monitor the evolving need for federal oversight in support of the nuclear modernization missions and adjust future staffing plans accordingly. NNSA established a full-time recruitment team focused on conducting outreach and recruitment for NNSA's mission critical occupations. This includes agency-sponsored career fairs, in which candidates can discuss career opportunities with hiring managers and have follow-up interviews, as well as career fairs targeted towards college students, transitioning military personnel and spouses, and individuals with disabilities. NNSA's recruitment and hiring actions will continue to support the Administration goals of promoting racial and economic equity across the Federal Government pursuant to Executive Order 13985, while promoting science and research and development. NNSA has continued to expand its recruitment and outreach efforts through sourcing and participating in numerous events to ensure the Agency is reaching all segments of society, to include all minority communities.

Entry Level Hires

NNSA continues to leverage a variety of sources to build the pipeline of future entry-level talent to include Office of Program Management Programs (Presidential Management Fellows Program, Pathways Intern Program, and the Operation Warfighter Program), and NNSA chartered programs (NGFP and MSIPP). From FY 2018 to FY 2024, NNSA has retained 65.9 percent of entry level hires.

Program Direction

	Funding ($K)			
	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs. FY 2023 Enacted
NNSA Federal Salaries and Expenses				
Headquarters				
Salaries and Benefits	281,540	257,925	319,036	37,496
Travel	14,107	11,868	14,126	19
Support Services	15,650	17,208	16,243	593
Other Related Expenses	49,509	52,337	55,491	5,982
Total, Headquarters	360,806	339,338	404,896	44,090
Total, Full Time Equivalents	1,296	1,182	1,397	101
Livermore Field Office				
Salaries and Benefits	16,088	16,715	17,596	1,508
Travel	182	197	237	55
Support Services	607	653		(607)
Other Related Expenses	644	1,530	2,059	1,415
Total, Livermore Field Office	17,521	19,095	19,892	2,371
Total, Full Time Equivalents	71	71	83	12
Los Alamos Field Office				
Salaries and Benefits	19,494	20,254	22,601	3,107
Travel	257	251	301	44
Support Services	1,111	827		(1,111)
Other Related Expenses	775	322	418	(357)
Total, Los Alamos Field Office	21,637	21,654	23,320	1,683
Total, Full Time Equivalents	94	94	97	3

Program Direction, Continued

	Funding ($K)			
	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs. FY 2023 Enacted
Sandia Field Office				
Salaries and Benefits	18,275	18,988	20,504	2,229
Travel	210	171	206	(4)
Support Services	474	366		(474)
Other Related Expenses	7,128	6,661	7,307	179
Total, Sandia Field Office	26,087	26,186	28,017	1,930
Total, Full Time Equivalents	89	89	88	(1)
Nevada Field Office				
Salaries and Benefits	16,869	17,527	18,614	1,745
Travel	195	154	185	(10)
Support Services	492	427		(492)
Other Related Expenses	1,245	694	810	(435)
Total, Nevada Field Office	18,801	18,802	19,609	808
Total, Full Time Equivalents	78	78	82	4
NPO Field Office				
Salaries and Benefits	25,450	-	-	(25,450)
Travel	345	-	-	(345)
Support Services	435	-	-	(435)
Other Related Expenses	1,945	-	-	(1,945)
Total, Pantex Field Office	28,175	-	-	(28,175)
Total, Full Time Equivalents	130	-	-	(130)

Program Direction, Continued

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs. FY 2023 Enacted
Pantex Field Office				
Salaries and Benefits	-	14,239	15,600	15,600
Travel	-	182	220	220
Support Services	-	137		-
Other Related Expenses	-	985	1,286	1,286
Total, Pantex Field Office	-	15,543	17,106	17,106
Total, Full Time Equivalents	-	65	75	75
Y-12 Field Office				
Salaries and Benefits	-	14,238	15,600	15,600
Travel	-	182	218	218
Support Services	-	137		-
Other Related Expenses	-	985	1,287	1,287
Total, Y-12 Field Office	-	15,542	17,105	17,105
Total, Full Time Equivalents	-	65	75	75
Kansas City Field Office				
Salaries and Benefits	7,442	7,732	8,844	1,402
Travel	126	149	179	53
Support Services	102	114		(102)
Other Related Expenses	604	692	786	182
Total, Kansas City Field Office	8,274	8,687	9,809	1,535
Total, Full Time Equivalents	39	39	44	5

Program Direction, Continued

	Funding ($K)			
	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs. FY 2023 Enacted
Savannah River Field Office				
Salaries and Benefits	9,742	10,122	24,157	14,415
Travel	153	124	339	186
Support Services	509	464		(509)
Other Related Expenses	95	83	225	130
Total, Savannah River Field Office	10,499	10,793	24,721	14,222
Total, Full Time Equivalents	47	47	119	72
NNSA Federal Salaries and Expenses				
Salaries and Benefits	394,900	377,100	462,552	67,652
Travel	15,575	13,278	16,011	436
Support Services	19,380	20,333	16,243	(3,137)
Other Related Expenses	61,945	64,289	69,669	7,724
Subtotal, NNSA Federal Salaries and Expenses	491,800	475,000	564,475	72,675
Use of Prior Year Balances	(16,800)		-	16,800
Total, NNSA Federal Salaries and Expenses	475,000	475,000	564,475	89,475
FTEs (paid from FSE)	1,844	1,727	2,060	216
FTEs (paid from WCF)	20	22	24	4
Total FTEs	1,864	1,749	2,084	220

Support Services and Other Related Expenses

	Funding ($K)			
	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs. FY 2023 Enacted
Support Services				
Management and Professional Services	19,380	20,333	16,243	-3,137
Total, Support Services	**19,380**	**20,333**	**16,243**	**-3,137**
Other Related Expenses				
Training	4,044	3,679	5,094	+1,050
Space and Occupancy Costs	14,096	17,817	17,705	+3,609
Headquarters Working Capital Fund (WCF)				
Supplies	547	547	558	+11
Building Occupancy	20,946	20,946	23,366	+2,420
Corporate Training Services	507	507	518	+11
Corporate Business Systems	2,405	2,405	2,456	+51
Overseas Representation	11,401	11,401	11,640	+239
Health Services	323	323	330	+7
TOTAL, Headquarters Working Capital Fund (WCF)	36,129	36,129	38,868	+2,739
Other Expenses				
Other Services	7,659	6,647	7,985	+326
Reception and Representation	17	17	17	+0
Subtotal, Other Expenses	7,676	6,664	8,002	+326
Total, Other Related Expenses	**61,945**	**64,289**	**69,669**	**+7,724**

Outyears
Program Direction

	Funding ($K)			
	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
NNSA Federal Salaries and Expenses				
Headquarters				
Salaries and Benefits	349,729	363,076	370,846	378,843
Travel	14,422	16,925	17,279	17,643
Support Services	16,584	18,932	19,330	19,736
Other Related Expenses	66,657	58,056	59,277	60,521
Total, Headquarters	447,392	456,990	466,732	476,743
Total, Full Time Equivalents	1,503	1,528	1,528	1,528
Livermore Field Office				
Salaries and Benefits	17,966	18,343	18,728	19,122
Travel	242	247	252	258
Support Services	-	-	-	-
Other Related Expenses	2,102	2,146	2,191	2,237
Total, Livermore Field Office	20,310	20,737	21,172	21,617
Total, Full Time Equivalents	83	83	83	83
Los Alamos Field Office				
Salaries and Benefits	23,076	23,561	24,055	24,561
Travel	307	313	320	327
Support Services	-	-	-	-
Other Related Expenses	427	436	445	454
Total, Los Alamos Field Office	23,810	24,310	24,821	25,342
Total, Full Time Equivalents	97	97	97	97

Outyears
Program Direction, Continued

	Funding ($K)			
	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Sandia Field Office				
Salaries and Benefits	20,935	21,375	21,824	22,282
Travel	210	214	219	224
Support Services	-	-	-	-
Other Related Expenses	7,460	7,617	7,777	7,940
Total, Sandia Field Office	28,605	29,206	29,819	30,445
Total, Full Time Equivalents	88	88	88	88
Nevada Field Office				
Salaries and Benefits	19,005	19,404	19,812	20,228
Travel	189	193	197	201
Support Services	-	-	-	-
Other Related Expenses	827	844	862	880
Total, Nevada Field Office	20,021	20,441	20,871	21,309
Total, Full Time Equivalents	82	82	82	82
Pantex Field Office				
Salaries and Benefits	15,928	16,262	16,604	16,953
Travel	225	230	235	239
Support Services	-	-	-	-
Other Related Expenses	1,313	1,341	1,369	1,397
Total, Pantex Field Office	17,466	17,833	18,207	18,590
Total, Full Time Equivalents	75	75	75	75

Outyears
Program Direction, Continued

	Funding ($K)			
	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Y-12 Field Office				
Salaries and Benefits	15,928	16,262	16,604	16,953
Travel	223	228	232	237
Support Services	-	-	-	-
Other Related Expenses	1,314	1,342	1,370	1,399
Total, Y-12 Field Office	17,465	17,832	18,206	18,589
Total, Full Time Equivalents	75	75	75	75
Kansas City Field Office				
Salaries and Benefits	9,030	9,219	9,413	9,611
Travel	183	187	191	195
Support Services	-	-	-	-
Other Related Expenses	803	819	837	854
Total, Kansas City Field Office	10,015	10,225	10,440	10,659
Total, Full Time Equivalents	44	44	44	44
Savannah River Field Office				
Salaries and Benefits	24,664	25,182	25,711	26,251
Travel	346	353	361	368
Support Services	-	-	-	-
Other Related Expenses	230	235	239	245
Total, Savannah River Field Office	25,240	25,770	26,311	26,864
Total, Full Time Equivalents	119	119	119	119

Outyears
Program Direction, Continued

	Funding ($K)			
	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
NNSA Federal Salaries and Expenses				
Salaries and Benefits	496,261	512,686	523,597	534,801
Travel	16,347	18,890	19,286	19,692
Support Services	16,584	18,932	19,330	19,736
Other Related Expenses	81,132	72,836	74,366	75,928
Total, NNSA Federal Salaries and Expenses	610,324	623,344	636,579	650,157
FTEs (paid from FSE)	2,166	2,191	2,191	2,191
FTEs (paid from WCF)	24	24	24	24
Total FTEs	2,190	2,215	2,215	2,215

Outyears
Support Services and Other Related Expenses

	Funding ($K)			
	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Support Services				
Management and Professional Services	16,584	18,932	19,330	19,736
Total, Support Services	**16,584**	**18,932**	**19,330**	**19,736**
Other Related Expenses				
Training	5,201	5,310	5,422	5,536
Space and Occupancy Costs	28,077	18,667	19,059	19,459
Headquarters Working Capital Fund (WCF)				
Supplies	570	582	594	607
Building Occupancy	23,856	24,357	24,868	25,391
Corporate Training Services	529	540	551	563
Corporate Business Systems	2,508	2,561	2,614	2,669
Overseas Representation	11,884	12,134	12,388	12,649
Health Services	337	344	351	359
TOTAL, Headquarters Working Capital Fund (WCF)	39,684	40,517	41,368	42,237
Other Expenses				
Other Services	8,153	8,325	8,500	8,679
Reception and representation	17	17	17	17
Subtotal, Other Expenses	8,170	8,342	8,517	8,696
Total, Other Related Expenses	**81,132**	**72,836**	**74,366**	**75,928**

Federal Salaries and Expenses
Program Direction

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Salaries and Benefit $394,900,000	**Salaries and Benefits $462,552,000**	**Salaries and Benefits +$67,652,000**
• Provides support for an NNSA federal staff of 1,844 FTEs, not including 20 that are funded through the WCF. • Includes 4.6% pay raise and 5% benefit escalation.	• Provides support for an NNSA federal staff of 2,060 FTEs, not including 24 that are funded through the WCF. • Includes 2.1% pay raise and 5% benefit escalation.	• Increase reflects FY 2024 5.2% pay raise and 5% benefit escalation, and FY 2025 2.1% pay raise and 5% benefit escalation. • Increase supports 216 additional FTEs including up to 85 transferred from DOE EM, Savannah River Operations Office to NNSA for landlord responsibility. The additional FTEs are primarily in support of Defense Programs to meet growing mission requirements and commitments including modernizing the nuclear deterrent and recapitalizing the aging infrastructure.
Travel $15,575,000	**Travel $16,011,000**	**Travel +$436,000**
• Supports domestic and foreign travel necessary as part of NNSA's mission.	• Supports domestic and foreign travel necessary as part of NNSA's mission.	• Increase primarily to provide management oversight of the growing NNSA mission and national security assistance and interface between NNSA Headquarters, NNSA Field Offices, DOE laboratories and production facilities, and local governments.
Support Services $19,380,000	**Support Services $16,243,000**	**Support Services -3,137,000**
• Includes Management and Professional Services and NGFP support.	• Includes Management and Professional Services.	• Reflects the realignment of funding responsibility for Field Office Support Services (-$3,924,000), NGFP support (-$1,500,000), and Quality Management (-$500,000) to WA and DNN. • Offset by use of prior year balances in FY 2023, and FY 2024 and FY 2025 escalation ($2,787,000).

Other Related Expenses $61,945,000	Other Related Expenses $69,669,000	Other Related Expenses $7,724,000
• Includes FSE's contribution to the DOE WCF ($36,129,000). • Provides funding for Space and Occupancy costs at Headquarters and field sites ($14,096,000). • Provides necessary training and skills maintenance of the NNSA federal staff to address future workforce needs and administration priorities, advance employee competencies, and demonstrate NNSA's commitment to the strategic development of all employees ($4,044,000). • Includes funding for miscellaneous procurements ($7,676,000).	• Includes FSE's contribution to the DOE WCF ($38,868,000). • Provides funding to support office space costs and minor renovations at headquarters and operations costs at the field offices ($17,705,000). • Provides necessary training and skills maintenance of the NNSA federal staff to address future workforce needs and administration priorities, advance employee competencies, and demonstrate NNSA's commitment to the strategic development of all employees ($5,094,000). • Includes funding for miscellaneous procurements ($8,002,000).	• Working Capital Fund reflects an increase for escalation and other adjustments (+2,739,000) • Space and Occupancy reflects the one-time use of prior year balances in FY 2023, FY 2024, and FY 2025 escalation (+$4,304,000); and realignment of scope for Field Office maintenance and recapitalization costs to WA, Infrastructure and Operations in the FY 2024 Request (-$695,000) (+3,609,000 Total). • Training reflects an increase to support career development and skills maintenance of an NNSA Federal staff level of 2,060 FTEs (+$1,050,000). • Miscellaneous Procurements reflects escalation (+$326,000).

DEPARTMENT OF ENERGY
Funding by Site
TAS_0313 - Federal Salaries and Expenses - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Argonne National Laboratory			
Program Direction - National Nuclear Security Administration	1,200	1,200	1,200
Total Argonne National Laboratory	**1,200**	**1,200**	**1,200**
Brookhaven National Laboratory			
Program Direction - National Nuclear Security Administration	7	7	7
Total Brookhaven National Laboratory	**7**	**7**	**7**
Carlsbad Area Office			
Program Direction - National Nuclear Security Administration	1	1	1
Total Carlsbad Area Office	**1**	**1**	**1**
Chicago Operations Office			
Program Direction - National Nuclear Security Administration	7	7	7
Total Chicago Operations Office	**7**	**7**	**7**
Idaho National Laboratory			
Program Direction - National Nuclear Security Administration	1	1	1
Total Idaho National Laboratory	**1**	**1**	**1**
Kansas City Site Office			
Program Direction - National Nuclear Security Administration	8,274	8,687	9,809
Total Kansas City Site Office	**8,274**	**8,687**	**9,809**
Lawrence Livermore National Laboratory			
Program Direction - National Nuclear Security Administration	1,100	1,100	1,100
Total Lawrence Livermore National Laboratory	**1,100**	**1,100**	**1,100**
Livermore Site Office			
Program Direction - National Nuclear Security Administration	16,421	17,995	18,792
Total Livermore Site Office	**16,421**	**17,995**	**18,792**
Los Alamos Site Office			
Program Direction - National Nuclear Security Administration	21,637	21,654	23,320
Total Los Alamos Site Office	**21,637**	**21,654**	**23,320**
National Energy Technology Lab			

DEPARTMENT OF ENERGY
Funding by Site
TAS_0313 - Federal Salaries and Expenses - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Program Direction - National Nuclear Security Administration	225	250	250
Total National Energy Technology Lab	**225**	**250**	**250**
Nevada Field Office			
Program Direction - National Nuclear Security Administration	18,802	18,802	19,609
Total Nevada Field Office	**18,802**	**18,802**	**19,609**
Nevada National Security Site			
Program Direction - National Nuclear Security Administration	3	3	3
Total Nevada National Security Site	**3**	**3**	**3**
NNSA Albuquerque Complex			
Program Direction - National Nuclear Security Administration	600	600	600
Total NNSA Albuquerque Complex	**600**	**600**	**600**
NNSA Production Office (NPO) - TN			
Program Direction - National Nuclear Security Administration	14,088	15,542	17,105
Total NNSA Production Office (NPO) - TN	**14,088**	**15,542**	**17,105**
NNSA Production Office (NPO) - TX			
Program Direction - National Nuclear Security Administration	14,087	15,543	17,106
Total NNSA Production Office (NPO) - TX	**14,087**	**15,543**	**17,106**
Oak Ridge National Laboratory			
Program Direction - National Nuclear Security Administration	7	7	7
Total Oak Ridge National Laboratory	**7**	**7**	**7**
Pacific Northwest National Laboratory			
Program Direction - National Nuclear Security Administration	1,500	1,500	0
Total Pacific Northwest National Laboratory	**1,500**	**1,500**	**0**
Richland Operations Office			
Program Direction - National Nuclear Security Administration	7	7	7
Total Richland Operations Office	**7**	**7**	**7**
Sandia Site Office			
Program Direction - National Nuclear Security Administration	25,487	25,586	27,417
Total Sandia Site Office	**25,487**	**25,586**	**27,417**

DEPARTMENT OF ENERGY
Funding by Site
TAS_0313 - Federal Salaries and Expenses - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Savannah River National Laboratory			
Program Direction - National Nuclear Security Administration	99	99	99
Total Savannah River National Laboratory	**99**	**99**	**99**
Savannah River Operations Office			
Program Direction - National Nuclear Security Administration	10,400	10,694	24,622
Total Savannah River Operations Office	**10,400**	**10,694**	**24,622**
Washington Headquarters			
Program Direction - National Nuclear Security Administration	357,847	352,515	403,413
Total Washington Headquarters	**357,847**	**352,515**	**403,413**
Total Funding by Site for TAS_0313 - Federal Salaries and Expenses	**491,800**	**491,800**	**564,475**

Weapons Activities

Weapons Activities

Weapons Activities ($K)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
Weapons Activities Appropriation	**17,116,119**	**17,116,119**	**19,848,644**	**+2,732,525**	**+16.0%**

Proposed Appropriation Language

For Department of Energy expenses, including the purchase, construction, and acquisition of plant and capital equipment and other incidental expenses necessary for atomic energy defense weapons activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101 et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion, and the purchase of one electric bus**,** *$19,848,644,000* to remain available until expended: *Provided,* That of such amount, *$135,264,000* shall be available until September 30, *2026*, for program direction.

Weapons Activities

Overview

Programs funded in the Weapons Activities appropriation support the Nation's current and future defense posture and necessary nationwide infrastructure of science, technology, engineering, and production capabilities without resuming underground nuclear explosive testing. Weapons Activities provides for the maintenance and refurbishment of nuclear weapons to continue sustained confidence in their safety, reliability, military effectiveness; investment in scientific, engineering, manufacturing capabilities for certification of the enduring nuclear weapons stockpile; and manufacture of nuclear weapon components. Weapons Activities also provides for maintenance and investment in the National Nuclear Security Administration (NNSA) nuclear complex infrastructure to be more responsive and resilient.

NNSA's Management and Operating (M&Os) contractors employ approximately 57,000 people across the enterprise, predominantly at eight geographical sites including Lawrence Livermore National Laboratory (LLNL), Sandia National Laboratories (SNL), Los Alamos National Laboratory (LANL), Nevada National Security Site (NNSS), Pantex Plant (PX), Y-12 National Security Complex (Y-12), Kansas City National Security Campus (KCNSC), and Savannah River Site (SRS). NNSA M&O partners are managed by a Federal workforce composed of civilian and military staff. Following the transfer of responsibility for management of the Savannah River Site (SRS) management and operating contract from the Office of Environmental Management to NNSA, the Nuclear Security Enterprise will add an additional 13,000 personnel. Additional details about these programs will be included in the FY 2025 Stockpile Stewardship and Management Plan (SSMP).

The FY 2025 Budget Request provides a 16.0% increase from FY 2023 Enacted to execute six simultaneous warhead modernization programs, including the B61-13 variant, while coordinating with DoD to plan for future systems; continue restoring and refurbishing production capability, including the capability to produce 80 pits per year as close to 2030 as possible; and maintain Stockpile Research, Technology, and Engineering capabilities– including design, certification, and assessment infrastructure – that are used every day to execute NNSA programs.

Highlights and Major Changes in the FY 2025 Budget

Stockpile Management

The mission for the Stockpile Management program is to maintain a safe, secure, reliable, and effective nuclear weapons stockpile. The Stockpile Management program encompasses five major subprograms that directly support the Nation's nuclear weapons stockpile. In FY 2025, **Stockpile Major Modernization** is scheduled to continue to execute Phase 6.6 (*Full-Scale Production*) activities including completion of Last Production Unit (LPU) for the B61-12 Life Extension Program (LEP) and W88 Alteration (ALT) 370; conduct the B61-13 *Phase 6.3 and 6.4 (Development/Production Engineering)* continue Phase 6.4 (*Production Engineering*) activities for the W80-4 LEP; continue Phase 6.3 (*Development Engineering*) activities for the W87-1 Modification Program; and continue and complete Phase 2 (*Feasibility Study and Design Options)* for the W93 Program. The W93 will commence Phase 2A (Feasibility and Cost Study). While a dedicated line item for the Sea Launched Cruise Missile (SLCM) is not currently included in the FY 2025 request, NNSA is proposing $1,165M for the W80-4 warhead which the NDAA associates with SLCM-N. NNSA will comply with the NDAA requirement and will work with the Navy to execute in a manner that provides the most deterrence value for the least risk to the modernization program, the production enterprise, and the military. **Stockpile Sustainment** will execute the activities necessary to sustain a safe, secure, reliable, and effective stockpile. **Weapons Dismantlement and Disposition (WDD)** will provide safe and secure dismantlement of nuclear weapons and components and continue legacy component disposition. **Production Operations (PO)** will provide site-specific, production-enabling capabilities to enable weapons production, including process improvements and investments focused on increased efficiency of production performance. **Nuclear Enterprise Assurance (NEA)** will prevent, detect, and mitigate potential consequences of subversion, both to the stockpile and to the associated capabilities to design, produce, and test nuclear weapons.

Stockpile Major Modernization updates the Nation's nuclear stockpile with modern components and designs while replacing aging or obsolete components to ensure continued service life, as well as enhancing security and safety features.

Stockpile Sustainment

The Stockpile Sustainment program directly executes maintenance, surveillance, assessment, surety, management activities, and support of weapons until they are dismantled for all enduring weapons systems in the stockpile.

Weapons Dismantlement and Disposition
The Weapons Dismantlement and Disposition (WDD) program provides weapon dismantlements, safety studies on retired systems, material characterization, legacy component disposition, and the disposal of retired weapon parts. Includes activities for technical analysis needed to dismantle and safely store weapons being removed from the stockpile.

Production Operations
The Production Operations (PO) program is a multi-weapon system manufacturing-based program that drives individual site production capabilities and capacity for the stockpile sustainment and modernization programs, including limited life component production, weapon assembly, and disassembly operations. Production Operations scope covers sustainment of labor required for weapon systems capabilities that enable individual weapon production and are not specific to one material stream.

Nuclear Enterprise Assurance (NEA)
The Nuclear Enterprise Assurance program ensures the Nuclear Security Enterprise (NSE) actively manages subversion risks to the nuclear weapons stockpile and associated design, production, and testing capabilities. Digital technologies introduce new vulnerability characteristics and multiple new susceptible pathways that if compromised can produce unacceptable physical impacts to safety, the environment, weapon performance, and loss of capabilities.

Production Modernization
Production Modernization is responsible for modernizing the facilities, infrastructure, and equipment that produce materials and components to meet stockpile requirements and maintain the Nation's nuclear deterrent. The program encompasses six major subprograms that sustain the Nation's nuclear weapons stockpile.

Significant changes in the FY 2025 Request include:

1. Primary Capability Modernization's increase supports Los Alamos Pit Production equipment purchases and installation activities and the hiring, training, qualification, and retention of additional staff to support the war reserve (WR) pit production ramp-up.
2. Secondary Stage Capability Modernization increase reflects new scope to invest in emerging risk areas at Y-12, including the Plant Lab, Assembly Disassembly facility, and General Manufacturing operations, to meet future mission demand and prevent failures or bottlenecks. It also reflects investments to reduce risk in depleted uranium and lithium operations, support depleted uranium operations beyond the 2030s, and support new necessary capabilities to produce other future weapon system components.
3. The Tritium and Domestic Uranium Enrichment increase reflects needs for labor and material purchases for Domestic Uranium Enrichment centrifuge development as the program advances towards larger-scale research and development (R&D) demonstrations. Increase also reflects completion of the DUE Pilot Plant options study and the initiation of design activities for the DUE Pilot Plant.
4. The Non-Nuclear Capability Modernization (NNCM) increase reflects support for the Kansas City expansion efforts through equipment procurements and the modernization of environmental testing capabilities at Sandia National Laboratories, critical to ensuring non-nuclear components can survive Stockpile to Target Sequence environments.
5. Capability Based Investments (CBI) funding modernizes scientific and manufacturing capabilities that have degraded due to aging, broken, or outdated equipment and supporting systems.
6. The Warhead Assembly Modernization (WAM) increase reflects initiation of a new program to modernize the capabilities needed to execute warhead assembly/disassembly operations.

Primary Capability Modernization
The Primary Capability Modernization program consolidates the management of primary-stage material processing and component production capabilities in the NNSA nuclear security enterprise. The program includes *(1) Plutonium Pit Production and (2) High Explosives and Energetics Modernization.*

The Plutonium Pit Production program provides funding for efforts across the nuclear security enterprise to restore the Nation's capability to produce 80 pits per year (ppy). NNSA will continue to provide additional details regarding Plutonium Modernization activities to Congressional staff through quarterly pit production briefings, as required by the FY 2020 Energy

and Water Development and Related Agencies Appropriations Act. NNSA remains committed to achieving the pit production capability goals on the path to 80 ppy, including the capability to produce not less than 30 pits at LANL.

The High Explosives and Energetics (HE&E) program focuses on modernization and prioritization of High Explosives (HE) processing facilities and qualification of high explosive, pyrotechnic, and propellant materials for supplying the nuclear security enterprise across five M&O sites (Pantex Plant, SNL, LANL, LLNL, and NNSS). The HE&E program enables the production of HE and energetic materials required for an effective stockpile, including the main charge, boosters, detonators, actuators, timer/drivers, spin rockets, and the materials necessary to achieve nuclear weapon safety and security.

Secondary Capability Modernization

The Secondary Capability Modernization includes capabilities for the secondary stage of nuclear weapons in the nuclear security enterprise. This includes ensuring the availability of strategic materials and other sub-component material streams that are managed by NNSA, as well as modernizing the facilities and operations required to process these materials, fabricate, and assemble the final components. The program includes (1) Enriched Uranium Modernization, (2) Depleted Uranium Modernization, (3) Lithium Modernization, (4) Advanced Materials and Capabilities Modernization (formerly Special Materials), (5) Mission Delivery Modernization (formerly Secondary Stage Capability Modernization), (6) the Lithium Processing Facility (LPF), and (7) the Uranium Processing Facility (UPF). The Secondary Capability Modernization subprograms modernize reconstitute and upgrade capabilities and capacity to provide a robust, flexible, and responsive nuclear security enterprise. The subprograms extend the life of facilities and equipment; mature and insert new technologies for better, safer, and more efficient processes; and construct facilities to support future requirements.

Major Subprogram Descriptions:

Enriched Uranium Modernization provides funding to modernize enriched uranium operations to ensure delivery of secondary components needed to maintain the stockpile and support the Naval Reactors Program and Nonproliferation programs.

Depleted Uranium Modernization enables the restart of lapsed capabilities so NNSA can meet imminent weapons delivery mission requirements. These capabilities lapsed in the early 2000s due to the reuse of materials, low-demand signals, and prioritization of other activities. These capabilities include feedstock procurement, restarting and maintaining DU and DU-niobium alloying and manufacturing capabilities, and investing in key new technologies. The capability to produce, process, and handle depleted uranium supports several key missions within the nuclear security enterprise, from providing components for LEPs to the down-blending of HEU to low-enriched uranium.

Lithium Modernization maintains the production of the nation's enriched lithium supply in support of Defense Programs, the DOE Office of Science, the Department of Homeland Security, and other customers. In addition, the program manages technology development that will improve the efficiency and reliability of the existing lithium capability and the Lithium Processing Facility (LPF).

Advanced Materials and Capabilities Modernization provides funding to develop and deploy a new modern production capability for new component technologies that will be used in all future canned subassemblies. In the late 2000s, the NNSA discontinued the legacy process used to produce certain components due to safety concerns. These new technologies will utilize materials that meet the performance requirements and are less hazardous to use than legacy materials.

Modification of Reporting Requirements for Uranium Capabilities Replacement Project
Section 3123 of the FY 2024 NDAA requires DOE/NNSA to submit, concurrent with the submission of the budget of the President for FY 2025 and each fiscal year thereafter until termination, matrices on the technological maturity, scope, cost, and schedule of UPF. The following matrices are intended to meet this requirement.

SEC. 3123. MODIFICATION OF REPORTING REQUIREMENTS FOR URANIUM CAPABILITIES REPLACEMENT PROJECT.

Section 3123 of the National Defense Authorization Act for Fiscal Year 2013 (Public Law 112–239; 126 Stat. 2177) is amended by striking subsection (g) and inserting the following new subsection: ''(g) PROGRAM ACCOUNTABILITY MATRICES AND GAO ASSESSMENTS.— (1) REQUIREMENT.—Concurrent with the submission of the budget of the President (as submitted to Congress pursuant to section 1105(a) of title 31, United States Code) for fiscal year 2025 and each fiscal year thereafter until the termination date specified in paragraph (4), the Administrator for Nuclear Security shall submit to the congressional defense committees and the Comptroller General of the United States the matrices described in paragraph (2) relating to the project referred to in subsection (a). (2) MATRICES DESCRIBED.—The matrices described in this subsection are the following: (A) TECHNOLOGY MATURITY MATRIX.—A matrix that identifies key milestones, development events, and specific performance goals for the development of critical technologies relating to the project referred to in subsection (a). (B) SCOPE, COST, AND SCHEDULE MATRIX.—A matrix that identifies— (i) causes of cost growth and schedule slippage, if any, for the project referred to in subsection (a), including challenges relating to construction, procurement, and supply chain issues; (ii) the impact of such cost and schedule problems on current and planned weapons modernization efforts; and (iii) the scope, cost, and schedule of activities funded by the uranium modernization program for the period of fiscal years 2024 through 2028 as set forth in the corresponding future-years nuclear security program submitted to Congress pursuant to section 2453 of title 10, United States Code. (3) GAO ASSESSMENT.—Not later than 180 days after receiving the matrices described in paragraph (2), the Comptroller General of the United States shall— (A) assess the progress made on the project referred to in subsection (a); and (B) provide to the congressional defense committees a briefing on the results of that assessment. (4) TERMINATION.—The requirements of this subsection shall terminate on the date that is one year after the date on which the project referred to in subsection (a) is completed.''

Section 3123 Uranium Processing Facility Technology Maturity Matrix

Technology Maturity Matrix – Uranium Processing Facility (UPF), Main Process Building (MPB), and Salvage & Accountability Building (SAB) Subprojects		
UPF Final Technology Readiness Report	**TRL-7 Definition; Technology Readiness Assessment Key Milestones and Development Events**	
UPF Microwave Casting Technology Readiness Assessment (TRA) Report for TRL-7 was issued July 2017 RP-EX-801768-A018, Rev. 0	TRL-7 is achieved when a full-scale prototype is demonstrated in a relevant operational environment, in accordance with U.S. Department of Energy (DOE) Guide DOE G 413.3-4A, Technology Readiness Assessment Guide.	The TRA review team assessed the microwave casting and product data against the TRA criteria and were unanimous in the affirmative that all criteria were met for TRL-7. The TRA team concluded there continues to be a path for certification. The TRA Report for TRL-7 was issued in July 2017, and when UPF achieved its baseline approval milestone in March 2018 technologies were assessed to be at TRL-7.
	An independent TRA team was formed to evaluate Microwave Technology against established TRL-7 criteria outlined in Y17-003, Technology Readiness Assessments. The team was led by the Y-12 National Security Complex (Y-12) Chief Scientist and included subject matter experts (SMEs) from Y-12, UPF, Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory (LANL), and Oak Ridge National Laboratory (ORNL).	Risks to process qualification were identified and informed the needs for further testing. This testing is essential to ensure microwave casting technology will meet Key Performance Parameters (KPPs) and Engineering Evaluation qualification requirements. Tests completed in FY 2018 and 2019 included studies aimed at minimization of high reflected power interruptions, statistical chemistry analysis, tooling improvements, and run profile optimization. Process optimization testing in FY 2018 demonstrated that plasmas could be effectively controlled and mitigated through the right combination of an argon-helium atmosphere and furnace pressure. A summary of the status of closed and open testing activities recommended by the TRA team is available in PLN YAREA-F-0069 000 02, Microwave Casting integrated Risk Reduction Plan, dated May 2023. Additional demonstration and process method development activities are planned for the period of FY 2024 through FY 2025.
Specific Performance Goal Test Attributes (additional information available at higher classification)	**Casting Attribute**	**Basis**
Microwave Performance	**Throughput**	RP-EJ-801768-A230, Casting Systems Dynamic Model Design Bases; DE-PE-801768-A042, UPF Casting Systems Design Criteria
	Temperature Profile	DE-PE-801768-A042, UPF Casting Systems Design Criteria
Casting Test Object Product Evaluation	**Machining - Dimensional**	DD-T802302-0036, 0050, 0051
	Soundness - Radiography	OT-OP-801768-A0004
	Chemical - Impurities	RM6K0003, Enriched Unalloyed Uranium Specification; For Hydrogen, RM6K0003 has only a target, TRL-7 criteria based on DA agreement using historical data.

Technology Maturity Matrix – Uranium Processing Facility (UPF), Main Process Building (MPB), and Salvage & Accountability Building (SAB) Subprojects		
Specific Performance Goal Test Attributes (additional information available at higher classification)	**Casting Attribute**	**Basis**
Casting Test Object Product Evaluation	**Uranium Chemical Assay Density**	RM6K0003, Enriched Unalloyed Uranium Specification
	Density	RM252950, Uranium
	Weldability - Radiography	DD-T802302-0050, 0051

Section 3123 Uranium Processing Facility Scope, Cost, and Schedule Matrix

Scope, Cost, and Schedule Matrix – Uranium Processing Facility (UPF), Main Process Building (MPB) and Salvage & Accountability Building (SAB) Subprojects	
Requirement	**Scope, Cost, and Schedule Descriptions and Factors**
N/A, Overview	• Building 9212 has historically provided highly enriched uranium (HEU) operations for the nuclear security enterprise but does not meet modern nuclear safety and security standards. • The Uranium Processing Facility (UPF) will replace Building 9212 capabilities for HEU casting, special oxide production, chemical recovery, and decontamination while incorporating modern capabilities and revised processes to increase the overall safety, security, and efficiency of HEU operations. • NNSA is maintaining Building 9212 and has taken steps to dramatically reduce the risks involved with continued production by removing material and replacing hazardous processes until UPF is available to ensure there is a reliable supply of enriched uranium capabilities. • UPF (combined) Risk Analysis Report CD-2/3 MPB, SAB & PSF Comprehensive Estimate at Completion was published DEC 2022 RA-PC-801768-A012, Rev.0. 2023. CEAC is in development; MPB/SAB Subproject BCP expected MAR 2024.

Scope, Cost, and Schedule Matrix – Uranium Processing Facility (UPF), Main Process Building (MPB) and Salvage & Accountability Building (SAB) Subprojects	
(i) causes of cost growth and schedule slippage, if any, for the project referred to in subsection (a), including challenges relating to construction, procurement, and supply chain issues;	The forecasted cost increases and schedule delays to the UPF project are driven by a combination of external factors (contractor performance, COVID and post-COVID supply chain issues, labor shortages, and construction escalation) and internal factors (overly optimistic assumptions and planning estimates, insufficient forecasting). External factors also influenced increased subcontract and equipment delivery costs and timelines. NNSA acknowledges it needs to improve its project management and forecasting ability. As a result, the Administrator has bi-monthly construction briefings and NNSA has committed to providing quarterly construction briefings to Congressional committees of jurisdiction to ensure that the lines of communication on this topic remain open. A full list of causes and factors include: • Global supply chain challenges • Vendor nuclear quality infrastructure has degraded resulting in material delivery delays for key equipment • Material costs were higher than expected • Workforce availability resulted in the use of hourly and travel incentives • Inadequate intermediate and long-term planning resulted in understated costs and duration for planning packages • Late delivery of major pieces of equipment and material delayed construction schedules and increased Level of Effort costs • Construction subcontractor costs increased due to interface issues with the craft, quantity changes and design changes • Initial cost overruns and schedule delays indicate that the contractor's priorities may have been misaligned with NNSA's priorities • Fixed price subcontracts and vendors packages did not include schedule incentives or liquidated damages clauses resulting in late delivery of services and procurements • Design confirmation activities cost more and took longer than planned • Project planning, scheduling and cost estimating was weak • Inadequate cost and schedule forecasting due to failure to incorporate trends in a timely manner • Overuse of Management Reserve (MR) masked the Cost Performance Index • Frequent re-planning and under planning masked performance issues • COVID-19 impacts. Additional direct costs for improved social distancing and enhanced cleaning to include additional busses and drivers, staggered reporting and lunch times, and direct costs associated with COVID-19 paid leave. Inefficiencies also occurred during peak periods of COVID-19 absenteeism due to time off for testing, illness, and recovery, and contact tracing.
(ii) the impact of such cost and schedule problems on current and planned weapons modernization efforts;	• NNSA is maintaining Building 9212 until UPF is available to ensure there is a reliable supply of enriched uranium capabilities. • The W87-1 Modification (Mod) Program is currently relying upon Building 9212 and will transition into UPF when the facility is available. • While the W87-1 Mod Program is not currently realizing significant negative impacts from UPF's revised schedule, continued delays would extend the time that the program is operating under inefficiencies that drive risk to the W87-1's cost and schedule. • The W93 program is in Phase 2, *Feasibility Study and Design Options*, and has not yet developed a complete design definition. Impacts from UPF delays cannot be adequately assessed until weapon designs are further developed and can inform facility demand requirements. • Significantly larger UPF delays would extend the time that the W93 Program would operate under Building 9212 inefficiencies that drive risk to the program's cost and schedule. • The impact of extended UPF delays has not been assessed for future modernization programs. • Increases to cost and schedule consume resources that are then unavailable for other urgent enterprise needs.

Scope, Cost, and Schedule Matrix – Uranium Processing Facility (UPF), Main Process Building (MPB) and Salvage & Accountability Building (SAB) Subprojects	

(iii) the scope, cost, and schedule of activities funded by the uranium modernization program for the period of fiscal years 2024 through 2028 as set forth in the corresponding future-years nuclear security program submitted to Congress pursuant to section 2453 of title 10, United States Code.	**2024 Highlights**
	• Continue activities that will allow NNSA to phase out mission dependency on Building 9212 by supporting the transition of enriched uranium capabilities into existing facilities and UPF and deactivating out-of-service systems in Building 9212. Activities include the following:
	  ○ Receive startup authorization for the calciner in Building 9212 to process low-equity uranium solutions and begin operating the electrorefining capability in Building 9215 to purify uranium metal.
	  ○ Conclude pre-operational testing and transition the direct chip melt front loading furnace to production in Building 9215 and advance the direct chip melt bottom loading furnace project.
	  ○ Reestablish a uranium oxide-to-metal conversion capability.
	• Maintain working inventory levels of material to reduce safety and security risks in enduring facilities and optimize the material composition of the uranium inventory.
	• Continue to implement a strategy to optimize limited space in enriched uranium facilities.
	• Develop, sustain, and increase the reliability of uranium analytical and manufacturing capabilities to reduce risks.
	• Extend the operational life of enduring enriched uranium facilities.
	• Reduce material inventory, deactivate systems, and process and disposition of legacy materials to phase out mission dependency on Building 9212.

	2025-2028 Key Milestones • Initiate work to fabricate and install equipment in Building 9215 to expand the chip processing capacity. • Advance the direct electrolytic reduction technology, which, with the electrorefining process, will provide the capability to convert uranium oxide to purified metal at Y-12. • Qualify the viability of casting enriched uranium parts using microwave technology, which is efficient and will improve the quality of the enriched uranium metal supply. • Maintain Target Working Inventory, the minimum amount needed, within enduring facilities to enhance the safety of existing facilities that will be operational through the 2040s. • Bridge the gap and reduce the risk of an oxide-to-metal conversion capability. • Optimize quantity and quality of purified metal production. Update Y-12 facility capabilities to accommodate UPF needs. **Uranium Modernization budget based on the 2025 FYNSP:** FY 2025: $ 280,681 FY 2026: $ 339,300 FY 2027: $ 349,728 FY 2028: $ 362,345 FY 2029: $ 369,930

Tritium and Domestic Uranium Enrichment

The Tritium Modernization and Domestic Uranium Enrichment (DUE) program is responsible for producing tritium and supplying unobligated low-enriched uranium to support national security needs. The program includes *(1) Tritium Modernization and (2) Domestic Uranium Enrichment*.

The Tritium Sustainment and Modernization program operates the national capability for producing tritium. The Tritium supply chain's capacity is increasing as part of a multi-year plan to reliably meet national security requirements. NNSA is producing tritium by irradiating tritium producing burnable absorber rods (TPBARs) in two TVA reactors during normal 18-month operating cycles. Tritium is extracted from the TPBARs at the Tritium Extraction Facility (TEF) at SRS. The tritium inventory is required to meet national security requirements, including support for limited-life component exchanges of tritium reservoirs that are deployed in the stockpile. The program establishes tritium production schedules, based on detailed computational models and annual tritium reconciliations, that maintain required tritium inventories, including reserve quantities.

The Domestic Uranium Enrichment program is responsible for ensuring a reliable supply of enriched uranium to support U.S. national security needs. Since the closure of the Paducah Gaseous Diffusion Plant in 2013, the United States has lacked the capability to produce enriched uranium free of peaceful use obligations (i.e., unobligated). DOE/NNSA requires unobligated enriched uranium to fuel reactors that produce tritium for nuclear weapons and to power the nuclear Navy. The DUE program is implementing a three-pronged strategy to supply current enriched uranium needs and re-establish a supply of enriched uranium to meet long-term needs. First, NNSA seeks to ensure and extend availability of its unobligated LEU fuel supply through the early 2040s by down-blending excess HEU. Second, DUE is preserving and advancing uranium enrichment expertise and technology to meet current and future U.S. government needs. Third, DUE is executing the acquisition process to re-establish a long-term supply of enriched uranium to support future U.S. national security needs.

Non-Nuclear Capability Modernization

The Non-Nuclear Capability Modernization (NNCM) program executes projects to ensure the enduring availability of non-nuclear capabilities for multiple weapon systems. The NNCM program is responsible for all non-nuclear components external to the primary or secondary stage in the nuclear explosive package (NEP). Non-nuclear components enable critical functionality in the warhead including arming, fuzing, and firing, key safety and use control features, and other vital functions. Providing these functions requires a wide range of components encompassing radiation-hardened microelectronics, neutron generators, gas transfer systems, power sources, electrical assemblies, cables, connectors, structural elements, pads/cushions, and a multitude of other parts that are incorporated into the systems that support or weaponize the NEP. The NNCM program modernizes the extensive suite of infrastructure and equipment required to support the non-nuclear component lifecycle inclusive of design, development, qualification, production, and surveillance. These capabilities ensure that components can survive environments encountered throughout the stockpile to the target sequence and over the life of the weapon.

Capability Based Investments

The Capability Based Investments (CBI) program executes projects to replace or enhance core enterprise capabilities through the recapitalization of high-risk of failure tests, measurements, and production equipment. CBI addresses enduring, multi-program requirements through discrete, short-duration projects. These investments recapitalize scientific and manufacturing capabilities that have degraded due to aging, broken, or outdated equipment and supporting systems. CBI activities primarily include capital equipment purchases and minor construction projects that enable the installation and use of the equipment and associated capabilities. These investments address needs beyond any single facility, campaign, or weapon system and are essential to achieving DP mission objectives. The CBI portfolio provides agility and reduces programmatic risk to mission across the nuclear security enterprise and ensures needed capabilities are available for stockpile stewardship, sustainment, and modernization.

Warhead Assembly Modernization

The Warhead Assembly Modernization (WAM) program, a new budget line for FY 2025, modernizes the capabilities needed to execute warhead assembly/disassembly operations at the Pantex Plant for weapons modernization, surveillance, and dismantlement programs.

Stockpile Research, Technology, and Engineering

The SRT&E portfolio provides the scientific foundation to design, certify, and assess the current and future stockpile, and includes the capabilities, tools, and components needed to support all missions. Funding requested for FY 2025 supports the continued implementation of the Enhanced Capabilities for Subcritical Experiments (ECSE) and preparations for NNSA's

first exascale high-performance computing system. These two capabilities are required to meet W80-4 LEP confirmation experiment and reduce uncertainty in the W87-1 Modification certification. In addition to the procurement and implementation of NNSA's first exascale machine, the funding supports the development and deployment of improved physics and engineering codes needed to support stockpile decisions to operate on this new platform. Funding in this area also supports the development of new materials, technologies, and processes to modernize our nuclear systems and production complex, as well as supporting several experimental testbed capabilities. This is accomplished through warhead component and production technology development and maturation.

Significant changes in the FY2025 Request include increased cadence of integrated weapon experiments at surrogate firing sites and vessel procurements, continued ramping up of the Nuclear Weapons Council (NWC)-directed Phase 1 Concept Assessment studies; NIF & Z facility sustainment activities; expansion of both the Production Simulation Initiative as well as previous Advanced Machine Learning Initiative to include additional r activities specified in the October 30, 2023, Execute Order on the Safe, Secure, ant Trustworthy Development and Use of Artificial Intelligence; , continued transitioning of technologies to the W93; and an expansion of digital engineering to improve production performance.

Assessment Science

The Assessment Science program provides the expertise and data needed to maintain confidence in the nuclear stockpile in the absence of nuclear explosive testing. Capabilities developed and maintained in the Assessment Science program support the entire Nuclear Security Enterprise, underwriting: (1) the design of modernized nuclear warheads; the scientific underpinnings required to conduct annual assessments of weapon performance and certification of all current warheads and those in life extension programs (LEPs); (2) the scientific insight to inform our understanding of the impacts of surveillance findings to ensure that the nuclear stockpile remains safe, secure, and effective; and (3) the core technical expertise required - both personnel and capability - to be responsive to technical developments and geopolitical drivers. Assessment Science also facilitates the assessment of current weapon and weapon component lifetimes, the development and qualification of modern materials and manufacturing processes, the exploration of concepts for component reuse, and the development of modern safety concepts for sustainment.

The major changes in the FY 2025 budget request for Assessment Science, are to support the design, assembly, and analysis of multiple subcritical experiments (SCEs), support the highest priority acceleration opportunities for samples and experiments in support of the Pu/Pit Aging Plan, and provide increased cadence of integrated weapon experiments at surrogate firing sites and vessel procurements to support future stockpile decisions. The increase is partially offset by reduced funding for Advanced Source and Detectors consistent with project profile.

Engineering and Integrated Assessments

The Engineering and Integrated Assessments program is responsible for ensuring system informed survivability in present and future stockpile-to-target sequences (STS) and ensures a responsive nuclear deterrent through collaborative partnerships, proactive integration, and assessments. This program primarily supports three of the mission areas, design, assess, and certify. Design is supported through prototype development to respond to unexpected developments that could threaten nuclear security and concept assessments which identify technology needs and prove in maturing technologies that accelerate the nuclear weapons acquisition process. Assess is through strengthening the science and engineering base by providing tools and methodologies for qualifying weapon components and certifying weapons without nuclear explosive testing. Certify is accomplished by supporting annual stockpile assessments through improved weapons surveillance technologies and warhead component aging assessments.

The major changes in the FY 2025 budget request for Engineering and Integrated Assessments the continuation of the Nuclear Weapons Council (NWC)-directed Phase 1, Concept Assessment, on various non-ballistic reentry vehicles (Next Generation Reentry Vehicle (NGRV)) and hardened-deeply buried targets (HDBT) by the Studies and Assessments program. The increase is partially offset by reduced funding for Combined Radiation Environments Survivability Test (CREST) facility Other Project Costs (OPCs) consistent with project rebaseline.

Inertial Confinement Fusion

The Inertial Confinement Fusion (ICF) program provides high energy density (HED) science capabilities and expertise to support design, certification, and assessment of the current and future stockpile without nuclear explosive testing. Its two-

fold mission is to meet immediate and emerging HED science needs to support the deterrent of today, and to advance the R&D capabilities necessary to meet those needs for the deterrent of the future. The ICF program enables access to and study of the HED regime through (1) the design and execution of complex physics experiments to improve our fundamental science understanding, (2) the development of instrumentation to diagnose physics phenomena at the extreme temperature, pressure, and density conditions relevant to nuclear weapons performance, and (3) the development and operation of experimental facilities capable of reaching those conditions. The ICF program's flagship facilities, the National Ignition Facility (NIF) at LLNL, Z at SNL, and Omega at the University of Rochester's Laboratory for Laser Energetics (LLE), represent a complementary set of capabilities designed to meet the diverse needs of weapons physics, the pursuit of ignition, and the exploration of fundamental HED science.

The major changes in the FY 2025 budget request for Inertial Confinement Fusion are to support NIF & Z facility sustainment activities. This increase is partially offset by reductions in High-Energy-Density (HED) and ignition science experimental activities and Diagnostics & Instrumentation development while preserving the necessary experiments and capabilities to deliver on the highest-priority stockpile stewardship needs.

Advanced Simulation and Computing

The Advanced Simulation and Computing (ASC) program provides high-end simulation capabilities (e.g., modeling codes, computing platforms, and supporting infrastructure) to meet the requirements of the SSP. Modeling the complexity of nuclear weapons systems is essential to maintaining confidence in the performance of our stockpile without underground nuclear testing. The ASC program provides the weapon codes that provide the integrated assessment capability supporting annual assessment and future sustainment program qualification and certification of the stockpile. ASC is also an integral element of the Stewardship Capability Delivery Schedule (SCDS). ASC provides critical capabilities that help inform decision-making related to the sustainment of the nuclear stockpile in support of U.S. national security objectives. The program also coordinates with NNSA and other government agencies, including the Intelligence Community, to support nonproliferation, emergency response, nuclear forensics, and attribution activities.

The major changes in the FY 2025 budget request for Advanced Simulation and Computing are to expand the Production Simulation Initiative, increase compute/data connectivity to production agencies, and support the development of new NNSA AI capabilities via the new AI for Nuclear Deterrence (AI4ND) portfolio. As such, the AI4ND investment will create the technologies and capabilities to support the Department's AI equities while also laying a firm foundation for long-term use of AI in supporting stockpile stewardship.

Weapon Technology and Manufacturing Maturation

The Weapon Technology and Manufacturing Maturation (WTMM) program is responsible for developing agile, affordable, assured, and responsive technologies and capabilities for nuclear stockpile sustainment and modernization to enable Defense Programs' mission success. The efforts enable evolving stockpile and production capabilities away from legacy systems and processes, providing for resilience, and laying the foundation for future success of the nuclear security enterprise. The core areas of work in FY 2025 include agile, assured, and affordable technologies; partnership with stakeholders to meet stockpile and customer requirements; qualification and certification; developing a skilled technical workforce and establishing enhanced capabilities.

The major changes in the FY 2025 budget request for Weapon Technology and Manufacturing Maturation support transitioning technologies to the W93, reduced efforts in exploratory additive manufacturing techniques and an expansion of digital engineering to improve production performance.

Academic Programs and Community Capacity Building

Academic Programs and Community Capacity Building enables robust and diverse Science, Technology, Engineering, and Mathematics (STEM) research for educational communities through a variety of methods. Investments in consortia and centers of excellence provide collaborative partnerships ready to tackle large questions through multi-disciplinary approaches, by leveraging preeminent scientists in relevant fields. Research grants and focused investigatory centers support individual principal investigators to foster a vibrant community that is responsive to new breakthroughs by providing flexibility for new ideas, diversity, and career growth. Specific support to minority and Tribal-serving institutions prepares a diverse workforce of world-class talent through strategic partnerships. Fellowships provide graduate students

key opportunities to connect with NNSA missions and provide direct experiences at NSE sites. User facilities provide opportunities for academic partners to use NNSA's cutting-edge research facilities and push frontiers of current scientific understanding. Additionally, Community Capacity Building capacity is vital to NNSA to help support workforce recruitment and retention as well as help support the capacity of communities surrounding the NSE labs, plants, and sites. This program will support underserved communities, including Tribal Nations, and rural areas affected by the activities at NNSA sites through four pillars: 1) Infrastructure Services – assistance with infrastructure needs to benefit the community (housing, transportation, educational/recreational tangibles); 2) Career and Business Development –training for native/local residents to qualify them for employment at NNSA laboratories, plants, and sites (LPS) related community partners; services to stimulate innovation and build career resources; 3) Community Services – LPS engagement with the community, educational programs, STEM programs, tutoring, internships/externships, crime prevention; 4) Health Services – services aimed to increase the general health of the populace in the community.

All Academic Programs and Community Capacity Building opportunities focus on quality science through competitive award, connection with NNSA mission work at national security laboratories and nuclear weapons production facilities, and a view to NSE's future needs and opportunities. The primary responsibilities of the program include (1) Managing academic solicitations and competitive awards, (2) Providing premier technical expertise aligned with the NSE's current and future needs, (3) Enabling connections between academic research communities and the NSE, as well as between communities surrounding NSE facilities and the NSE to foster understanding of NNSA mission, and (4) Attracting and training a future workforce through on-site opportunities and personal connections with laboratory scientists and engineers.

Infrastructure and Operations (I&O)

The Infrastructure and Operations program maintains, operates, and modernizes NNSA's infrastructure in a safe, secure, and cost-effective manner to support program execution while seeking to maximize return on investment and reduce enterprise risk. The program also plans, prioritizes, and constructs facilities and infrastructure to support all NNSA programs including DOE owned federal Field Offices, except for, programmatic construction projects, which are funded by the capability sponsor. Infrastructure and Operations consists of the following programs: Operations of Facilities, Safety and Environmental Operations, Maintenance and Repair of Facilities, Recapitalization, and Line-Item Construction Projects. Operations of Facilities funds the NNSA facilities to operate in a safe and secure manner and is critical to achieving the administration's plutonium, uranium, tritium, lithium, high explosives, and other mission objectives. This program includes essential support such as water and electrical utilities, safety systems, lease agreements, and activities associated with Federal, state, and local environmental, worker safety, and health regulations. The Safety and Environmental Operations program provides for the Department's Nuclear Criticality Safety Program (NCSP), Nuclear Safety Research and Development (NSR&D), Packaging subprogram, Environmental Operations subprogram and Nuclear Materials Integration (NMI) subprogram. These activities support safe, efficient operation of the nuclear security enterprise through the provision of safety data, nuclear material packaging, environmental monitoring, and nuclear material tracking.

The Maintenance and Repair of Facilities program directly funds maintenance activities across the NNSA enterprise for the recurring day-to-day work required to sustain and preserve NNSA facilities in a condition suitable for their designated purpose. These efforts include predictive, preventive, and corrective maintenance activities to maintain facilities, property, assets, systems, roads, and vital safety systems. The Recapitalization program is key to modernizing NNSA's infrastructure. The Recapitalization program modernizes NNSA's infrastructure by prioritizing investments to improve the condition and extend the life of structures, capabilities, and systems thereby improving the safety and quality of the workplace. Infrastructure and Operations line-item construction projects replace obsolete, unreliable facilities and infrastructure to reduce safety and program risk while improving responsiveness, capacity, and capabilities.

The major changes in the FY 2025 budget request provides funding for activities to enable plutonium pit production, expand capacity at the Kansas City National Security Campus (KCNSC), and address infrastructure modernization throughout the complex. Funding is also requested to support ongoing Savannah River Site activities previously funded in Defense Environmental Cleanup, as well as infrastructure investments necessary to begin transitioning SRS to an enduring mission site.

Secure Transportation Asset
The Secure Transportation Asset (STA) supports safe, secure transport of the Nation's nuclear weapons, weapon components, and special nuclear material throughout the NSE. Nuclear weapon life-extension programs, limited-life component exchanges, surveillance, dismantlement, nonproliferation activities, and experimental programs rely on STA activities to ensure safe, secure, and on-schedule transport. The FY 2025 Request supports modernizing and sustaining STA transportation assets, including life extension of the Safeguards Transporter until it is replaced by the Mobile Guardian Transporter; vehicle sustainment; replacement armored tractors, escort, and support vehicles; upgrades of the Tractor Control Unit to accommodate for communications and security; and continued development and testing of the Mobile Guardian Transporter. The first Mobile Guardian Transporter production unit is planned for completion as close to FY 2029 as possible and will begin a phased in approach to replace the current Safeguard Transporter. Program Direction resources in this account provide salaries and expenses for the secure transportation workforce, including Federal Agents.

Defense Nuclear Security
The Office of Defense Nuclear Security (DNS) leads, develops, and implements the National Nuclear Security Administration's (NNSA) security program to enable its nuclear security enterprise (NSE) missions. DNS provides protection for NNSA personnel, facilities, nuclear weapons, and materials from a full spectrum of threats, ranging from minor security incidents to acts of terrorism, at its national laboratories, production plants, processing facilities, and the Nevada National Security Site (NNSS). In addition, DNS provides nuclear security expertise for a broad set of evolving national security needs, in line with its core mission, such as those in defense nuclear nonproliferation, homeland security, and intelligence.

Employing more than 2,200 Protective Force officers, DNS secures more than 6,000 buildings and protects more than 69,000 personnel. The FY 2025 request includes funding to fill positions in key security program areas required to implement a risk-based, layered protection strategy at the sites. The request also supports increased security needs associated with known mission growth in weapons programs across the NSE, including plutonium pit production, Kansas City expansion efforts, and preparation for transition to operations of the Uranium Processing Facility (UPF). In addition, the request reflects support for FY 2025 Core Security requirements, as well as initiatives for the Physical Security Center of Excellence (PSCOE) and the Center for Security Technology, Analysis, Response, and Testing (CSTART) as well as funding for the WEPAR project, which will install a new Perimeter Intrusion Detection and Assessment System (PIDAS) section.

Information Technology and Cybersecurity
The NNSA Office of the Associate Administrator for Information Management and Chief Information Officer (OCIO) is responsible for information management, information technology (IT), and cybersecurity for the NNSA enterprise.

The OCIO supports IT and cybersecurity services and solutions, which include continuous monitoring, cloud-based technologies, and enterprise security technologies (i.e., identity, credential, and access management). As a mission partner, OCIO ensures and enables the availability of a secure infrastructure for mission activities and information sharing for the NNSA and its mission partners. The office manages the IT portfolio, federal IT investments, services, and projects in alignment with the NNSA and the Department of Energy Office of the Chief Information Officer strategies, as well as other national policy drivers. The FY 2025 Request enables the development and execution of integrated IT initiatives that provide an effective and secure technology infrastructure across the enterprise.

FY 2026 – FY 2029 Key Milestones

- **Stockpile Management**
  - Complete B61-12 LEP life of program component overbuilds and program closeout activities (FY 2026).
  - Conduct B61-13 LEP System Final Design Review (FDR) and complete First Production Unit (FPU) and life of component builds in (FY 2026). Complete Last Production Unit and program closeout activities (FY 2028).
  - W88 ALT 370 will execute REST surveillance scope, complete last production unit and complete program closeout activities in FY 2026.
  - W80-4 will conduct Air Force LRSO joint testing throughout FY 2026 to FY 2028, deliver and test final Aircraft Maintenance and Capability (AMAC) (FY 2026), receive Phase 6.5 authorization, make the FPU, and complete the final Development Review and Acceptance Group (FDRAAG) in (FY 2027), then conduct System and Warhead Production Steady State Gate, produce the System Production Review in FY 2028.

- Conduct W87-1 Joint Test Assembly (JTA) development flight tests in addition to Sentinel environmental flights with the Mk21A in conjunction with the Air Force, complete the System Baseline Design Review and the Baseline Cost Report (2026) and enter Phase 6.4 (2027).
- Continue W93 coordination with DOD-sponsored aeroshell, support RPD Shift that is driving earlier development activities for CSA, Mechanisms, FSA, AF&F Subsystem, COTS and Material Procurements, and Test and Evaluation (FY 2026). Complete W93 Program Phase 2A including the Weapon Design and Cost Report (WDCR) in (FY 2026) then obtain W93 Program Phase 3 authorization in (FY 2026). Conduct Conceptual Design Review (CDR) and Gates (FY2027), continue experimental test campaigns: hydrodynamic, ground, NNSA and Navy flight tests (FY 2027-2029).
- Stockpile Sustainment will complete development, qualification, production, and delivery of all scheduled Limited Life Components (LLC) for all systems. LLCs include gas transfer systems (GTS), neutron generators (NG), and alteration kits delivered to sustain the nuclear weapons stockpile; conduct surveillance program activities for all weapon systems using data collection from flight tests, laboratory tests, and component evaluations to assess stockpile reliability, performance, and safety; conduct Annual Assessment activities for all weapon systems including the in-depth testing and analysis of systems, subsystems, and components; analyze, evaluate, and close high priority Significant Finding Investigations (SFI) in accordance with the currently approved plans; and complete legacy component builds on legacy equipment for life of program needs.
- WDD will conduct dismantlement activities and disposition consistent with the annual Nuclear Weapons Stockpile Memorandum.
- Production operations will continue support of production equipment maintenance; support detonator production at LANL for 3-4 LEPs, W88 Stockpile System, W78 JTA, and ALT activities for multi-weapons; maintain critical Neutron Generator Enterprise to ensure production for an average of ~950 units per year; and increase critical skilled labor and address attrition to maintain Stockpile Major Modernization scope and schedules in FY 2026.
- NEA will address the most significant subversion risks as determined by mission impact at all eight NNSA sites; institutionalize NEA policy, training, and qualification programs across NNSA; integrate cybersecurity risk management into the nuclear weapon acquisition process; mature counter-subversion tools and capabilities and assurance standards for the workforce; and execute a comprehensive strategy for inventorying the range of systems that are potentially at risk in the OT and NWIT environments as per FY 2024 NDAA section 3222.

- **Production Modernization**
  - Achieve initial 30 pits per year production capability (2028), with CD-4 for the 30B LAP4 subproject expected before the end of 2030; obtain CD-2/3 for SRPPF (2026) and obtain CD-4 for High-Fidelity Training and Operations Center (HFTOC) as part of SRPPF (2028); and obtain CD-4 for West Entry Control Facility as part of LAP4 (2028).
  - Achieve Mark Quality IHE material production from Indian Head (FY 2029) and CD-4 approval for HESE in FY 2028; complete the material specification for LX-17 high explosive and achieve Mark Quality production for the W87-1; conduct the first full-scale live-HE system vulnerability test simulating a cold x-ray environment; and continue with the qualification of an alternate vendor for the manufacturing of FK-800 and execute predevelopment production for the W93 main charge.
  - Maintain Target Working Inventory, the minimum amount of enriched uranium needed for operations, within enduring facilities to enhance the safety of existing facilities that will be operational through the 2040s and beyond.
  - Advance the direct electrolytic reduction technology, which, with the electrorefining process, will provide the capability to convert uranium oxide to purified metal at Y-12.
  - Begin activities in support of a future operational release plan to transition lithium operations to the LPF and reduce mission reliance on Building 9204-2. Achieve Beneficial Occupancy and start-up engineered equipment in the Advanced Materials and Capabilities Modernization Facility at Y-12. Reach technology readiness milestones for Advanced Materials and Capabilities Modernization technologies and continue to reach the next technology readiness level milestones for new Advanced Materials and Capabilities Modernization technologies required for production.
  - Begin producing Advanced Materials and Capabilities Modernization components to meet imminent weapons delivery milestones such as process prove-in and starting qualification.

- Continue to invest in measures to increase confidence in the tritium supply chain and maintain tritium production in two reactors operating over 18-month reactor cycles sufficient to meet tritium inventory requirements.
- Support Weapons Engineering Tritium Facility (WETF) de-inventory mission at LANL and execute process system sustainment plan (PSSP) to refurbish or replace tritium processing equipment.
- Complete down-blending campaign to provide additional LEU fuel for tritium production.
- Complete design and begin construction of a DUE Pilot Plant.
- Begin operating engineering scale DCAS2 testbed at Oak Ridge National Laboratory.
- Manage TFF risks and plan for restart of the TFF project.
- Complete equipment outfitting for KCNSC short-term expansion plan and for first phases of KCNSC long-term expansion plan; achieve CD-2/3 for Power Sources Capability.
- Meet current commitments that enable W80-4, W87-1, and W-93 modernization programs.
- Complete equipment replacement and refurb projects at LANL that support the roadmap to 30 pits per year.
- Modernize sub-critical testing capabilities used for stockpile assessment, NEP design, and weapon certification activities to support planned sub-crit schedules.

- **SRT&E**
  - Field the combined environment Majesty test series; develop a multiprobe diagnostic approach to quantify ejecta mass; evaluate Shallow Bubble Collapse (SBC), a new ejecta production mechanism that can occur under multiple-shock conditions based on the collapse of bubbles near the free surface of the material; design proposal for a Flex shot (or series) studying SBC in integral geometries.
  - Continue execution of experiments in support of the National Plutonium Aging Strategy; develop HE material options for the future stockpile, and maturation of qualification standards, including new energetic molecules/formulations in support of the FY 2027 SCDS pegpost on “High Explosive and Energetic Material Options”; complete high Z shock ramp compression experiment at NIF up to terapascal pressure to validate and discriminate between equation of state (EOS) models.
  - Execute first diffraction experiments in containment geometry on high Z metals, providing the data necessary for multiphase equations of state; collaborate with Plutonium Modernization Program to identify opportunities for advancement and prioritization in the Pit Production II pegpost (FY 2029); and continue closing gap of Mesoscale Materials Mission in coordination with Office of Science and its labs.
  - Execute subcritical experiments in the PULSE ZEUS Test Bed using NDSE (FY2027) and complete 17-D-640, U1a Complex Enhancements Project (FY2028).
  - Continue the Delivery Environment’s 10 Year Strategic Plan that forecasts and advances the development and systematic progression for systems through current-intermediate-future delivery platforms and environments.
  - Maintain and extend nuclear environment test capabilities at the Hermes, Saturn, ACRR, and the NIF facilities and achieve CREST CD-1.
  - Maintain early weapon design option studies and STS environment analyses to identify research and development activities for the FSW, per NWC strategic direction and in coordination with USSTRATCOM and the Military Services, conduct concept assessments to inform NWC decision-makers of the strategic impacts from the pursuit of various nuclear security enterprise and weapon capabilities.
  - Assess models (material models, transport models, and analytics) for general model compatibility, model interoperability, and model scalability in support of the Aging and Lifetimes digital twin for aging project.
  - Use DA/PA collaboration to demonstrate the ability to progress from a clean sheet design through demonstration prototype in two years to include hydrotesting, flight testing, and environmental testing using digital engineering.
  - ICF will refine driver requirements for magnetic direct drive (MDD) paths to high yield and volume burn (VB) and assess prospects for high yield with laser indirect drive (LID) and laser direct drive (LDD) (FY 2026); develop LDD options for enhanced x-ray options (FY 2027); determine the limit of implosion efficiency in LDD on Omega (FY 2028); achieve VB data objectives defined in the FY 2023 VB strategy, supported by the FY 2026 assessment (FY 2028); and assess options to increase margin of high yield MDD designs (FY 2029).
  - Develop and deploy a production-level simulation capability to perform assessments and develop mitigation strategies for hostile encounters and optimize next-generation weapons code technologies on advanced architecture systems, address remaining code performance and portability issues, and improve code usability for critical missions.

- Deploy physics models and simulation methodologies for evaluation of weapon performance and response in relevant environments and build focused physics simulation capabilities and libraries that take full advantage of advances in next-generation computing architectures and algorithmic advances in heterogeneous computing, quantum computing, neuromorphic computing, and machine learning to provide improved material property and performance assessments.
- Continue development of improved power management technologies tailored to modernized applications; deploy advanced safety mechanisms and demonstrate technologies on a relevant demonstrator; build proof-of-concept demonstrators of improved safety architectures that minimize/eliminate issues with inadvertent electrical transmission; and construct novel surety architectures test articles to address emergent needs.
- Development and transition of a modular and adaptable architecture with enhanced capabilities to the next program of record that result in a nuclear stockpile able to respond quickly and easily to changing policy, technology, and threat environments and Field Programmable Gate Array (FPGA) fabrication and programming software trust certification completion and achievement of TRL 5. Static Random-Access Memory (SRAM), Triton and Raptor processors, and one-time programmable non-volatile memory sample parts available to customers for transition.
- Transition methods improving existing manufacturing technologies to production modernization to eliminate component manufacturing risk before stockpile insertion; develop and demonstrate various techniques and approaches for cost effective rapid prototyping in support of both basic research and development and stockpile systems programs and advance additive capabilities for a broad spectrum of components while also developing a fundamental understanding of the differences between legacy materials and additive materials to broaden the application of additive manufacturing across the enterprise.

- **Academic Programs and Community Capacity Building**
  - Supports cohort of individual investigator grants in fields of nuclear science, radiochemistry, and materials at extreme conditions to develop the next generation of highly trained technical staff.
  - Supports new Funding Opportunity Announcement for the next cohort of centers of excellence expected to be released in Quarter 2 (Q2) FY 2027, to be awarded on FY 2028 funds (joint with JPHEDLP).
  - Supports full cohorts of SSGF and LRGF fellows.

- **Infrastructure and Operations**
  - Provide support for pit production, with a focus on the LANL production mission of at least 30 pits per year, major modernization programs, and other NNSA missions such as nonproliferation and counterterrorism. The program also supports efforts to improve facility condition and continuing to modernize NNSA's infrastructure to reduce mission and safety risks through the application of an enterprise risk management methodology.
  - Support line-item construction investments largely directed to mission enabling infrastructure.
  - Seek operational efficiencies by deactivating and dispositioning facilities that are no longer needed, thereby reducing operations, maintenance, and recapitalization requirements.
  - Continue Fukushima fuel debris recovery support.
  - 3 new or modified Defense Program Packaging to support shipping DP components for next 30+years.
  - Installation of new Ogallala wells to address new contamination concerns, replace data control instrumentation for two groundwater pump and treat systems, and initiate installation of In-situ Bioremediation Systems at Pantex.
  - Nuclear Materials Management and Safeguards System (NMMSS) must continue to fulfill its role as the Official State System of Accounting for nuclear materials for the U.S.

- **Secure Transportation Asset**
  - Delivery of MGT FPU as close to FY 2029 as possible and lifecycle replacement of 737-400 aircraft in FY 2027.
  - Facility and minor construction projects across STA sites, including construction of the Training Command Multi-Use Facility, Agent Operations Central Command Federal Agent Facility, Aviation Hangar Extension, and Apron C replacement.
  - Replacement of the next Armored Tractors, Escort Vehicles, and Tractor Control Unit in mission vehicles.
  - Continue to support FA and staff FTEs, travel for mission, operational, and training requirements, EITS/DOECOE fees, HRP, and support service contracts.

- **Defense Nuclear Security**
  - Sustain counter uncrewed aircraft system (CUAS) operation at sites possessing Category (CAT) 0/I quantities of SNM.
  - Complete planned SIRP projects aligning with NNSA's priority to recapitalize security infrastructure.
  - Complete Caerus core deployments and continue transition of field equipment.
  - Complete WEPAR project at Y-12 National Security Complex (Y-12).

- **Information Technology and Cybersecurity**
  - Implement cloud-based Enterprise Governance Risk and Compliance (eGRC), enhancing the ability to analyze and share critical cybersecurity risk information and improving enterprise situational awareness.
  - Invest in classified mobile solutions, improving critical capabilities to improve manufacturing and logistics systems and for senior leaders to effectively communicate and collaborate.
  - Expand M&O cybersecurity programs in support of pit production and expand sensitive compartmented information facilities (SCIF) to support IT and cybersecurity activities.
  - Implement Controlled Unclassified Information (CUI) protocols to safeguard information.
  - Augment cybersecurity resources for NNSA Field Offices to reduce backlog of information security requests and provide for consistent implementation of automatic authorization.
  - Enhance NNSA's data sharing capabilities, developing a series of frameworks that focus on sharing data with OGAs and stakeholders in line with EO 14028 and further expand the NNSA Center of Excellence (COE) for Threat Intelligence to DOE elements, enhancing DOE's threat hunting capabilities.
  - Reinforce the security posture for highly classified information and enhance the capability to share information with the Department of Defense (DOD) by modernizing the network architecture, as well as upgrading and enhancing security.
  - Provide classified IT infrastructure enhancements and improvements to support both the nuclear security and non-nuclear security activities across the DOE enterprise and develop architecture of the classified wireless network for non-pit production facilities.
  - Leverage modern systems and secure data transfer technologies to improve collaboration and coordination and increase automation capabilities to perform rapid, reliable, consistent, and secure technology deployments and improve business processes and user experience.
  - Partner with DOE OCIO, DOE IN, M&Os, and OGAs to ensure technology services meet organizational requirements and to provide the systems, tools, training, and support to leverage NNSA data for mission requirements.
  - Develop a roadmap to support and sustain advanced analytic capabilities, including AI/ML, from the research and development phase to production and deployment.

FY 2023 Accomplishments

- **Stockpile Management**
  - B61-12 LEP completed ship level quantities to support DOD delivery schedules, four System Retrofit Evaluation System Test joint flight tests on PA-200 and B-2 aircraft platforms, 15 System Retrofit Evaluation System Test laboratory tests at the Weapon System Evaluation Test Lab and delivered the High-Fidelity Canned Subassembly for a FY 2025 Performance Evaluation Test Unit System flight test.
  - W88 Alt 370 executed full-scale component and system-level production, delivered all Navy commitments on schedule, including system and joint test assembly deliverables, and met all REST surveillance requirements and supported Navy testing.
  - W80-4 LEP completed the Completed Program Protection Plan (PPP), Nuclear Explosive Package (NEP) Certification Plan, the draft Nuclear Weapon Subsystem Test Plan (NWSSTP), the Draft Preliminary Weapon Development Report (required for Phase 6.4 entry) and continued coordinated flight test requirements with the Air Force.
  - W80-4 ALT-SLCM coordinated activities with DOD to explore AF&F design that is system agnostic and could support a variety of delivery platforms.
  - W87-1 Modification Program conducted component Conceptual Design Reviews, completed first W87-1 system ground test and several life-of-program material procurements, continued coordinated flight test requirements with the Air Force, released the cost of the program through the Weapon Design and Cost Report, and entered Phase 6.3, Development Engineering.

- W93 Program conducted Technology Readiness Assessments for W93 component options and Surety Architecture Analysis of Alternatives (AOA), completed two design iterations of Mk7 Aeroshell with the Navy, developed intraorganizational Interface Requirements Agreements (IRAs) and Technology Transfer Agreements (TTAs) to mature candidate technologies, capabilities, and infrastructure.
- Stockpile Sustainment delivered all scheduled LLCs for systems; and conducted surveillance activities for all weapon systems using data collection from flight tests, laboratory tests, and component evaluations to assess stockpile reliability without nuclear testing which culminated in completion of all Annual Assessment Reports and generation of Laboratory Director Letters to the President.
- WDD met stockpile and naval reactor requirements through prioritized dismantlement schedules, maintained focus on Pantex FY 2023 dismantlement program, dispositioned weapon program components to keep legacy piles from growing, and conducted component characterization of hazards on time with no impact to worker safety.
- Production Operations sustained labor base that spans multiple programs to meet current stockpile deliverables and NNSA's production mission, supported the development of an initial Weapon Quality Management System (WQMS) Dashboard to help the Federal Team monitor the health of the NNSA NSE, executed over 600k hours in support of Programmatic Equipment Maintenance, completed over 90k calibrations for equipment and tooling in support of production activities, provided independent quality engineers and staff for the W80-4 and W87-1 production realization efforts, Stockpile Sustainment, and Pit Production Qualification programs by supporting >1,200 Engineering Authorizations, >50 Engineering Evaluations, and >140 Product Realization Teams, and maintained 100% data server availability for tritium process computing maintenance to support LLCE GTS production and GTS surveillance and classified communications/data management.
- NEA established a government-led NEA Core Team of multidisciplinary subject matter experts (SMEs), provided technical support and expertise to the Air Force and Office of the Secretary of Defense, developed an implementation plan for long-term assurance of non-nuclear components logistics systems, established and improved NEA assurance laboratories and tools, and completed NEA assessments and mitigation plans for highest mission-impacting operational technologies at each of the eight NNSA sites.

- **Production Modernization**
  - Produced 9 pit builds in PF-4 successfully to support process qualification and product certification toward WR pit production.
  - Installed equipment in PF-4 to support increased production.
  - Improved Transuranic (TRU) waste management and characterization capabilities to support safe and efficient TRU waste disposition at LANL.
  - Began WR production of non-nuclear components at KCNSC.
  - Achieved placement of 6.5 Full-Time Equivalents (FTEs) of mutual support to LANL production activities that build on the Knowledge Transfer Program (KTP).
  - SRPPF received approval and started work on the Dismantle & Removal CD-3A scope.
  - Installed and turned over to operations, the first two pieces of equipment in the Machining Training Center at SRS.
  - Obtained LAP4 CD-2/3 for 30 Base Installation (30B) Subproject in January 2023.

- **SRT&E**

  Assessment Science
  - Preparation for first experiments on the LANSCE Pu@pRad capability for explosively driven dynamic plutonium experiments on an intermediate scale will be an important complement to capabilities at NNSA and is on track for delivery in 2024.
  - First Bosque (controlled D-T dispersion) HED experiments at the NIF.
  - Miramar 2 successfully executed in support of the Nimble SCE series. Executed DAC experiments at HPCAT to extend the pressure range of high-Z materials data and time-resolved structural information at different compression rates.
  - JASPER executed experiments in support of certifications efforts and the Pu Aging program.
  - Performed Experiments on NIF to measure compressibility of Helium implanted lead (Pb).
  - Field first calibration of rate stick experiments for developing model calibrations of new DAAF formulation, with the goal of a new DAAF based PBX.

- tri-lab partners, WSU, and Argonne, leading to later milestone completion including a mission need statement.
- Executed the first Z experiment with pressed PETN to acquire data on an unreacted equation of state.
- Completed study report on evaluation of deep machine learning as a tool for radiographic analysis which studied artificial intelligence/machine learning (AI/ML) approaches to both reconstruction and parameter estimation for a wide range of fundamental and focused experiments.
- Achieved highest dense plasma focus neutron yield to date (1.2E12 neutrons).
- Performed simulations and experiments of structured sources of a vacuum rod-pinch (VRP) x-ray source to explore methods for improving radiographic performance of the VRP x-ray source at Cygnus.
- Continued expanding the weapon science validation basis using studies of relevant nuclear explosive test data and off nominal and non-stockpile designs to advance the understanding of relevant physics processes, increase confidence, and support stockpile assessment and modernization.
- With Engineering and Integrated Assessments (Advanced Certification & Qualification, Weapons Survivability), conducted Z experiments to develop capability to test larger-area samples with more realistic geometries in x-ray environments.
- Obtained essential data from Opacity-on-NIF platform, under conditions like those previously achieved by the Opacity-on-Z platform, delivering the first rigorous comparison of opacity data between the two different platforms and to multiple opacity theory models.
- Achieved CD-2/3 for ASD.
- Completed drilling of the PULSE 996 borehole at NNSS.
- Completed UCEP CD-3B.
- Initiated ZEUS Testbed Facility Infrastructure tunneling in PULSE that will house an NDSE capability at NNSS.
- Completed 140 successful Deuterium tests on the ZEUS machine that will be installed into the NNSS PULSE facility.
- Demonstrated major new capability at DARHT: the variable field of view (VFV) represents a powerful new set of options for designers and experimenters.
- VFV was utilized on two of the most complicated hydrotests ever executed at DARHT.
- Weapon design laboratories executed 18 major Integrated Weapons Experiments at various firing sites.
- Fired the 5,000th shot at Cygnus in the NNSS PULSE supporting subcritical experiments.

- **<u>Engineering and Integrated Assessments</u>**

  Archiving and Support
  - Completed Independent Nuclear Weapons Assessment Process (INWAP) in accordance with 50 U.S.C. 2525.
  - Newly developed analysis tools enable refined fireball yield assessments for historical (Dominic Series) atmospheric tests. Accurate historical yields confirm or adjust estimated yields which strengthen modern modeling simulation tools.
  - WAVES, a production engineering analysis and simulation tool, was released as an open-source software to universities. It supports engineering simulation, analysis workflows as well as best practices in version control, documentation, automation, regression testing, and data archiving. The software had been downloaded almost two thousand times. It has the potential to improve hiring for students who have used the tool in their university work.

  Delivery Environments
  - Collaborated with the SRP on the Sled Test Analysis and Engineering Design at Full Scale. Procured sled test article hardware for the full-scale sled test and finalized diagnostics integration with Holloman High Speed Test Track (HHSTT). Executed initial test at HHSTT in August 2023 to evaluate sled and track performance.
  - Developed pre- and post-processing support for thermal reduced order model within Sora (LLNL Flight Simulation Code). Demonstrated the insensitivity to thermal environments in future-system problems of interest.
  - Leveraged an ASC Validation & Verification project work on Multiple Input, Multiple Output powered flight specification derivation methods. Developed necessary elements to perform a multi-axis powered flight vibration test. Completed plans for FY 2023 efforts toward evaluating displacement and shock / vibration sensors and met with the Joint Technology Demonstrator (JTD) team to discuss opportunities for instrumentation.

Weapons Survivability

- Established new capabilities to simulate re-entry vehicles (RVs) interacting with blast shock including a high-speed RV traveling through a large atmospheric blast.
- Delivered survivability evidence in support of the W93 advancement to Phase 2.
- Successfully conducted the first commissioning shot for the National Ignition Facility (NIF) Direct Laser Impulse (DLI) capability. NIF DLI is a collaborative capability development project sponsored by the UK, DTRA, and USDOE.
- Successfully fielded an experiment for model validation in-core at the White Sands Missile Range (WSMR) Fast Burst Reactor (FBR), a first-of-its-kind operation for many personnel at the facility and laboratory.

Studies and Assessments

- Completed Next Generation Reentry Vehicle (NGRV) Year 2 technical study that supports U.S. Air Force Advanced Concepts Study.
- Completed NGRV 60 Day Feasibility Study as requested by the U.S. Air Force to determine the feasibility of incorporating W87-1 warhead design features and components into a new Reentry Vehicle (RV) warhead design.

Aging and Lifetimes

- Performed simulations of full scale accelerated aging tests for validation of Diffusion ReACtiOn (DRACO) application and updated sink model to include full war reserve configuration for insertion into DRACO.
- Updated pit model with latest surveillance data and assessed various platforms for Monte Carlo simulation options.
- Developed machine learning approach utilizing testing, modeling, and simulation to predict corrosion response across a range of environments.
- Continued implementation of the Spectrally Encoded Imaging (SEI) / Deadzone Cutback Test (DZC) at Pantex and demonstrated a test shot.
- Completed analysis to assess the ability of the Shell Acceleration Initiation Train (SAIT) test to resolve insensitive high explosive corner turning and dead zones.
- Completed characterization of the first accelerated aging plutonium alloy and summarized the synthesis and characterization of this alloy.

Stockpile Responsiveness

- In support of production responsiveness, SRP fully integrated the production plants into the SRP program to explore issues from design for manufacturability to specific production processes and improved methods for qualification.
  - Explored potential new materials and manufacturing capabilities that could shorten the delivery of long lead time components for stockpile systems.
  - Designed, fabricated, and tested the first iteration of prototype hardware that could be leveraged for multiple applications.
  - Deployed complex-wide digital collaboration tools to accelerate data exchange and speedup collaboration between design and production agencies.
- Continued development and demonstration of the use of commercial launch services to provide low-cost, high tempo flight testing required to integrate modern technologies, configurations and materials into systems required under stockpile modernization. Executed two flights of LANL prototype systems integrating new technologies at White Sands Missile Range using rockets and launch services provided by X-Bow.
- Completed the NWC task on Hard and Deeply Buried Targets (HDBT) defeat by examining a wide range of design options that could be mated to potential DoD delivery systems.
- Performed hypersonic reverse ballistics testing at the Arnold Engineering Development Complex (AEDC) at Arnold AFB, along with several other small-scale tests, in preparation for a series of two hypersonic sled track tests. The first test was executed at the Holloman AFB High Speed Sled Track to prove out the rocket system for an FY 2024 system demonstration test.
- Reinvigorated DOE reentry vehicle prototyping capability enabling earlier execution of integrated component certification activities and system-level safety tests.

Advanced Certification and Qualification

- Advanced in-situ inspection technologies to accelerate production rates and yields and reduce qualification testing for new manufacturing technologies, including additive manufacturing of metals and high explosives.
- Developed methods for AM HE, producing large components at Advanced Manufacturing of Energetics Facility.
- Performed key experiments for optically initiated detonators including demonstration of equivalence of performance with traditional detonation processes with alternate HE formulations.
- Begun building prototype (with SRP) of a brand-new Nuclear Explosive Package for use in the Agile Processes and Technologies (APT) demonstrator that was designed for certifiability and manufacturability.
- Prepared a hydro test in support of ECSE technology development involving a novel design and new materials.
- Delivered RX-72 explosive charges for hydro testing.

- **Inertial Confinement Fusion**
  - Broke previous record neutron yield from deuterium-tritium targets on the NIF and achieved yields greater than 1 MJ six times and repeated fusion ignition four times over the calendar year 2023, demonstrating a robust megajoule platform has been delivered.
  - Continued to explore new platform designs for improved compression and low mix on the NIF to attain higher yields.
  - Developed theoretical framework for scaled-up performance of MagLIF implosions and conducted a detailed study to provide insights into scaling MagLIF targets to a next-generation driver, demonstrating for the first time that impurities mixed into the target can enhance fuel magnetization while degrading performance.
  - Successfully completed the double-cylinder experimental campaign at Z which was designed to challenge and validate mix-hydrodynamics modeling of deceleration phase instability growth in ICF targets (in partnership with SAT).
  - First successful shot with a radiochemical-doped high-density carbon capsule at NIF provides scientifically valuable data and opens possibilities for HED nuclear science.
  - Resolved decades old mystery about shock-induced metallization of polystyrene with advanced density functional theory.
  - Demonstrated successful first imaging of a high-Z inner shell in a double shell implosion at the NIF using the advanced radiographic capability, which was consistent with the size and shape of synthetic radiographs.
  - NNSA's HED Facilities Operations: executed 311 shots on NIF; 150 shots on Z; and 2061 shots on Omega.
  - Delivered the ICF 10-yr Facility and Infrastructure plan to Congress.
  - Completed identification of key sustainment activities needed for NIF and Omega and began staffing. First sustainment activities completed at NIF, Z, and Omega.

- **Advanced Simulation and Computing**
  - Demonstrated readiness of next-generation integrated codes for running on El Capitan when it will be deployed in late FY 2024.
  - Improved engineering assessment codes to predict reentry environments and response as part of the FY 2023 SCDS *Survivability for Reentry Environments* pegpost.
  - Continued to advance nuclear performance assessment codes for boost and secondary performance, safety codes to address multi-point safety issues, and engineering assessment codes for hostile, normal, and abnormal environments.
  - Performed a simulation study of bulk plutonium aging by alpha decay, extending Monte Carlo methods into timescales of years and decades. This study allowed for an analysis and assessment of age-accelerated Pu.
  - Improved Pu aging models and evaluations to utilize age-aware models in FY 2025 AAR.
  - Delivered an IHE detonation model that accounts for initial conditions, such as density, temperature, and other material characteristics. Model results will be compared with focused and larger experiments to document areas to improve the model.
  - Identified W93 exemplar problems to test workflow implementations and Digital Engineering Ecosystem (DEE) integration.
  - Developed workflow for machine learning analysis of new training dataset and trained new networks on reduced analysis of radiographic images to infer performance quantities.

- Deployed ATS-3/Crossroads system at LANL and completed system integration.
- Developed prototype exascale software environments for ATS-3/Crossroads and ATS-4/El Capitan Early Access Systems in collaboration with vendors and partners in the DOE Exascale Computing Project (ECP).
- Completed contract for the AAPS-2/Vanguard-II system and prototype accelerator components for deployment at Sandia in FY 2025. Completed the ATS-4/El Capitan site infrastructure project to provide electrical, mechanical, and structural modification required to install the system at LLNL.
- Completed the design and procurement of long-lead infrastructure for the Strategic Computing Complex (SCC) Electrical Upgrade minor construction project in preparation for ATS-5 at LANL.
- Started 4MW-power minor construction project to Building 725-E data center at SNL.
- Completed Capabilities for Nuclear Intelligence (CNI) Practicum 7 jointly with the United Kingdom's Atomic Weapons Establishment.
- Completed a high-explosive (HE) test series to characterize HE relevant to the IC and other global security partners.

- **Weapon Technology and Manufacturing Maturation**
  - Completed the integration of the requisite hardware for a full-scale demonstration of the optical initiation system on a ground-based demonstration with full functionality.
  - Provided surety related support to the U.S.-UK Joint Technology Demonstrator project for their ground test unit.
  - Integrated specialized memory chipsets into a use-control design concept that will allow for unique control concepts. Advanced Optical Initiation to TRL 5/MRL 3. It is ready for a program of record to select it for insertion. This met a key milestone and the TRT can be closed out. KCNSC has built all the hardware for the OI system.
  - A fuel cell was integrated into the ReDX 2B flight test funded by SRP. The fuel cell performed exactly as expected and was the first demonstration in a flight environment. It even kept working after the rocket crashed in the desert!
  - The LLNL OI all IHE system team has worked to integrate the technology into a flight test demonstrator.
  - Completed testing of a Foundation Bus through body cable design at the Saturn Radiation Test facility.
  - Completed two Rabbit Hydrotests.
  - Advanced a novel DAAF-based insensitive explosive, PBX9505 (LAX 133.5), to TRL 5.
  - Matured CMOS8 production capability to complete the first Flip Flop yield learning and TCV4 (Technology Characterization Vehicle) lots.
  - Advanced additive manufacturing techniques for high explosives that will enable formulations that are safer to produce and replace legacy materials that are no longer commercially available.
  - Applied machine learning models to identify replacement candidate polymers for At Risk Materials.

- **Academic Programs and Community Capacity Building**
  - Sponsored highly attended annual SSAP symposium bringing together research teams supported by the SSAA and JPHEDLP programs.
  - Continued consortium-based STEM grants that specifically targeted HBCUs, HSIs, and TCUs and provided the opportunity to build STEM capacity and academic infrastructure with alignment to the nuclear security enterprise.
  - Increased student engagement and internship opportunities and confirmed the hiring of various minority students into the nuclear security enterprise that have matriculated through various STEM consortium pathways.
  - Supported a 2-year pilot program for ZNetUS to advance pulsed magnetic science, technology, and high energy density physics for energy and national security applications and assist in creating the needed pipeline of next-generation scientific leaders.
  - Collaborated with DOE Office of Science in funding a new class-size record number of 39 first-year fellows in the 2023 cohort to be trained as next-generation leaders in computational science.
  - Supported PSAAP III Academic Alliance Centers in their fourth project year to achieve annual milestone objectives.

- **Infrastructure and Operations**
  - Completed 41 Recapitalization projects and 11 disposition projects with associated 92,666 gsf and included one process-contaminated of 14 assets demolished. Completed construction for the Emergency Operations Center project at Y-12 and SNL and the Y-12 Fire Station. These projects were completed on schedule and within budget.

- Completed 53 Recapitalization projects adding 208k sq ft and 13 disposition projects with associated 28,013 gsf eliminated, including one process-contaminated asset in FY 2023.
- Completed several construction projects including the Emergency Operations Center projects at Y-12 and SNL and the Y-12 Fire Station utilizing streamlined delivery processes for non-complex, non-nuclear projects.
- Purchased Building 23 in Kansas City, MO in February 2023, providing an additional 450k square feet of manufacturing space to support the expansion of KC mission operations.
- A Letter of Intent was signed between NNSA and the Developer for KCNExT and executed two design agreements in support of the Phase 1 office building. The NEPA EA was also posted for public review and comment.
- Developed Contour Measurement Machine (CMM), a new capability for experiments at NCERC and a significant step forward in measurement fidelity and developing modern international criticality safety benchmarks.
- Continued to fabricate DPP-3 and DPP-3 basket assemblies.
- Completed the Sodium Debris Bed UO2 Disposition project at INL. Effectively reducing NNSA legacy liability, freeing up vault storage space in key INL processing facilities, and demonstrating disposition pathway for other potential low-equity HEU at DOE sites.
- After decades of No Defined Use, the Nuclear Material Loan Program (NMLP) removed and dispositioned from the Massachusetts Institute of Technology nearly 2 Metric Tons of Government owned LEU rods, which made room for a long-awaited shipment of Government owned Heavy Water needed to continue the operation of the University's experimental nuclear reactor.
- The Nuclear Materials Management and Safeguards System (NMMSS) has completed the reconciliation of 273 inventories for NRC licensee facilities and 51 inventories for DOE/NNSA sites. NMMSS has produced and distributed nearly 8,000 reports to domestic stakeholders, which includes inventory change reports, material balance reports, and physical inventory listing reports, that contained over 53,000 entries to the International Atomic Energy Agency (IAEA). Additionally, NMMSS provided 200 reports to the NNSA Office of Nonproliferation and Arms Control (NPAC), as well as completing 42 special requests and answered over 1,400 routine data inquiries and reporting assistance questions.
- Conducted Long-Term Stewardship (LTS) scope to ensure continued protection of human health and the environment at NNSA LTS sites and adjacent areas.

- **Secure Transportation Asset**
  - Completed 92 weapon/special nuclear materials shipments and made over 64 limited-life component deliveries without incident.
  - MGT:
    - Completed Test Article 2 (TA2) Over-the-Road test.
    - Acquired, assembled, and tested all modules for MGT TA2.
    - Completed environmental testing of the MGT door.
    - Delivered the rolling chassis for the MGT Pre-Production Unit.
    - Completed 3 FACT courses and graduated 42 new FAs.
    - Implemented initiatives for FAs such as, higher starting pay, recruitment/retention bonuses, and ladder positions.

- **Defense Nuclear Security**
  - Successfully transferred all security scope to the M&O partner at NNSS.
  - Successfully completed over 68,700 adjudicative actions, over 9,500 grants, and over 28,600 processing actions supporting security clearances.
  - Granted over 8,000 new security clearances supporting approximately 11% year-over-year mission growth across the NNSA NSE.
  - Initiated efforts to streamline security approvals for medically necessary personal electronic devices to be introduced into specific secure areas.
  - Achieved initial operating capability for CUAS platforms installed at NNSS and the Pantex Plant.
  - Reenergized collaboration activities between DNS and the Office of Nuclear Matters within the Department of Defense's (DOD's) Office of the Under Secretary of Defense for Acquisition and Sustainment. This effort focuses on opportunities to identify and implement improvements in how the two agencies harmonize their respective

nuclear security programs, including threat assessments, technology development, policy, and other areas of mutual benefit.
  - Achieved Full Operating Capability for Portable Intrusion Detection System units, a rapidly deployable detection system (compensatory measure) developed in partnership with DOD.
  - Broke ground on the Quadrant 1 Perimeter Intrusion Detection and Assessment System (PIDAS) refresh and completed the Post 8 Booth Replacement SIRP projects at Y-12.
  - Developed, tested, and implemented Local Area Nuclear Material Accountability System (LANMAS) software enhancements at all user sites.
  - Co-led the Enduring Organizational Improvement Initiative for the Governance and Management: Risk Management sub-group. NNSA senior leadership recognized the team for identifying safety and security requirements that could be retired permanently or modified to improve efficiency without increasing risk.

- **Information Technology and Cybersecurity**
  - Institutionalized cyber exercises to test NNSA's security posture.
  - Executed external Red Team testing of NNSA OCIO's internet facing systems.
  - Completed a pilot for augmenting NNSA OCIO's internal Red Team.
  - Addressed findings from the NNSA Independent Cyber Assessment Report, including improving recruitment and retention of cybersecurity staff across NNSA, enhancing real-time monitoring capabilities, and expanding proven COE offerings.
  - Developed an operational technology strategy.
  - Completed a pilot for implementing an operational technology monitoring capability.
  - Completed a pilot for utilizing AI analysis of traffic allowed through existing cybersecurity capabilities.
  - Implemented Continuous Diagnostics and Mitigation (CDM) capabilities and reporting to DOE.
  - Shifted enterprise procurements to headquarters and assigned a role with responsibility to ensure timely and cost-effective procurements and renewals of enterprise capabilities.
  - Began implementing an enterprise solution for EDR on unclassified and classified environments.
  - Began implementing EO 14028-related roadmaps for ZTA, MFA, EDR, security logging, etc.
  - Initiated a pilot for transitioning Trusted Internet Connections (TIC) functions from local implementations to an enterprise monitoring capability.
  - Started an effort to leverage virtual environments to augment training and enhance student learning.
  - Implemented a local instance of Automated Indicator Sharing (AIS) at the NNSA SOC as a precursor to enterprise expansion.
  - Implemented collaborative communications to enable the ability of cyber defenders to chat with the Cybersecurity and Infrastructure Security Agency (CISA) and other agencies.
  - Integrated a non-NNSA laboratory into the COE for Threat Intelligence to further improve the collective defense of DOE and NNSA.
  - Developed and promoted workforce strategies and programs to attract, develop, and retain IT and cybersecurity professionals both among the Federal workforce and at NNSA's laboratories, plants, and sites.
  - Implemented modernization projects to improve collaboration and communication, working closely with DOE and element Chief Information Officers (CIOs) and IT Managers to move to Windows 10 and Microsoft 365.
  - Developed and implemented cloud-based services and solutions.
  - Improved application development and implementation with updated tools and technologies.
  - Established the NSE Data Council and implemented innovative data sharing projects.

Legacy Contractor Pensions and Settlement Payments
This budget line includes funding for the Requa settlement reached in 2019 as well as DOE's annual reimbursement made to the University of California (UC) Retirement Plan (UCRP) for former UC employees and annuitants who worked at the Lawrence Livermore National Laboratory (LLNL) and Los Alamos National Laboratory (LANL).

The *Requa* lawsuit involved UC employees of LLNL who retired prior to the Laboratory's transition to a new contractor on October 1, 2007. The retirees had been receiving health insurance through a UC health plan but when the LLNL contract transitioned to LLNS, the employees were offered health insurance through the new LLNL contractor, leading the retirees to

file a lawsuit seeking reinstatement into the UC health plan. The parties settled the lawsuit in 2019, and a final judgment was issued in April 2020. NNSA agreed, pursuant to the legacy UC-LLNL Contract, to provide UC a portion of the total costs to settle the lawsuit, over a period of seven years through FY 2026. NNSA's responsibility for FY 2025 is $9,000,000.

This budget line also continues to include the Weapons Activities share of the DOE's annual reimbursement made to the University of California (UC) Retirement Plan (UCRP) for former UC employees and annuitants who worked at the Lawrence Livermore National Laboratory (LLNL) and Los Alamos National Laboratory (LANL). The annual reimbursement is based on the actuarial valuation report and an annual assessment provided by UC and is covered by the terms described in the contracts. These contracts are paid through the Legacy Contractor Pensions and settlement payments line item.

The Weapons Activities share of these costs in the FY 2025 Budget is $30,634,000 which will be partially funded with prior year balances.

Entry Level Hires

NNSA supports a variety of programs to help train and recruit the next generation of leaders in managing the nuclear stockpile, nonproliferation, nuclear security, and international security, such as the NNSA Graduate Fellowship Program (NGFP), the Minority Serving Institutions Partnership Program (MSIPP), and, where appropriate, the Presidential Management Fellows (PMF) program. These programs foster the pipeline of qualified professionals who will sustain expertise in these areas through future employment within the NNSA nuclear security enterprise. In FY 2025, the Weapons Activities appropriation projects providing $5,500,000 for NGFP support and development activities.

DOE Working Capital Fund (WCF) Support

NNSA Weapons Activities appropriation projected contribution to the DOE WCF for FY 2025 is $37,383,000. This funding covers certain shared enterprise activities including managing enterprise-wide systems, data, and telecommunications and supporting the integrated acquisition environment.

Weapons Activities
Funding by Congressional Control ($K)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
Weapons Activities Appropriation					
Stockpile Management					
B61-12 LEP	672,019	672,019	27,500	-644,519	-95.9%
B61-13 LEP	0	0	16,000	+16,000	+0.0%
W88 ALT 370	162,057	162,057	78,700	-83,357	-51.4%
W80-4 LEP	1,122,451	1,122,451	1,164,750	+42,299	+3.8%
W80-4 ALT-SLCM	20,000	20,000	0	-20,000	-100.0%
W87-1 Modification Program	680,127	680,127	1,096,033	+415,906	+61.2%
W93 Program	240,509	240,509	455,776	+215,267	+89.5%
Total, Stockpile Management	2,897,163	2,897,163	2,838,759	-58,404	-2.0%
Stockpile Sustainment	1,321,139	1,321,139	1,356,260	+35,121	+2.7%
Weapons Dismantlement and Disposition	56,000	56,000	54,100	-1,900	-3.4%
Production Operations	630,894	630,894	816,567	+185,673	+29.4%
Nuclear Enterprise Assurance	48,911	48,911	75,002	+26,091	+53.3%
Total, Stockpile Management	4,954,107	4,954,107	5,140,688	+186,581	+3.8%
Production Modernization					
Primary Capability Modernization					
Plutonium Modernization[a]					
Los Alamos Plutonium Modernization					
Los Alamos Pit Production	767,412	767,412	984,611	+217,199	+28.3%
21-D-512 Plutonium Pit Production Project, LANL	588,234	588,234	470,000	-118,234	-20.1%
15-D-302 TA-55 Reinvestments Project Phase 3, LANL	30,002	30,002	39,475	+9,473	+31.6%
07-D-220-04 Transuranic Liquid Waste Facility, LANL	24,759	24,759	0	-24,759	-100.0%
04-D-125 Chemistry and Metallurgy Research Replacement Project, LANL	138,123	138,123	0	-138,123	-100.0%
Total, Los Alamos Plutonium Modernization	1,548,530	1,548,530	1,494,086	-54,444	-3.5%

[a] Congressional control title change requested for FY 2025 to Los Alamos Pit Production from Los Alamos Plutonium Operations.

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs. FY 2023 Enacted	
				$	%
Savannah River Plutonium Modernization					
Savannah River Pit Production[a]	**58,300**	**58,300**	**75,332**	**+17,032**	**+29.2%**
21-D-511 Savannah River Plutonium Processing Facility, SRS	**1,200,000**	**1,200,000**	**1,200,000**	**+0**	**+0.0%**
Total, Savannah River Plutonium Modernization	**1,258,300**	**1,258,300**	**1,275,332**	**+17,032**	**+1.4%**
Enterprise Pit Production Support[b]	**88,993**	**88,993**	**121,964**	**+32,971**	**+37.0%**
Total, Plutonium Modernization	**2,895,823**	**2,895,823**	**2,891,382**	**-4,441**	**-0.2%**
High Explosives & Energetics					
High Explosives & Energetics	**101,380**	**101,380**	**115,675**	**+14,295**	**+14.1%**
23-D-516 Energetic Materials Characterization Facility, LANL	**19,000**	**19,000**	**0**	**-19,000**	**-100.0%**
21-D-510 HE Synthesis Formulation and Production, PX	**108,000**	**108,000**	**0**	**-108,000**	**-100.0%**
15-D-301 HE Science & Engineering Facility, PX	**20,000**	**20,000**	**15,000**	**-5,000**	**-25.0%**
Total, High Explosives & Energetics	**248,380**	**248,380**	**130,675**	**-117,705**	**-47.4%**
Total, Primary Capability Modernization	**3,144,203**	**3,144,203**	**3,022,057**	**-122,146**	**-3.9%**
Secondary Capability Modernization	**536,363**	**536,363**	**755,353**	**+218,990**	**+40.8%**
18-D-690 Lithium Processing Facility, Y-12	**216,886**	**216,886**	**260,000**	**+43,114**	**+19.9%**
06-D-141 Uranium Processing Facility, Y-12	**362,000**	**362,000**	**800,000**	**+438,000**	**+121.0%**
Total, Secondary Capability Modernization	**1,115,249**	**1,115,249**	**1,815,353**	**+700,104**	**+62.8%**
Tritium and Domestic Uranium Enrichment	**506,649**	**506,649**	**661,738**	**+155,089**	**+30.6%**
18-D-650 Tritium Finishing Facility, SRS	**73,300**	**73,300**	**0**	**-73,300**	**-100.0%**
Total, Tritium and Domestic Uranium Enrichment	**579,949**	**579,949**	**661,738**	**+81,789**	**+14.1%**
Non-Nuclear Capability Modernization					
Non-Nuclear Capability Modernization	**123,084**	**123,084**	**141,300**	**+18,216**	**+14.8%**
22-D-513 Power Sources Capability, SNL	**0**	**0**	**50,000**	**50,000**	**0%**
Total, Non-Nuclear Capability Modernization	**123,084**	**123,084**	**191,300**	**+68,216**	**+55.4%**

[a] Congressional control title change requested for FY 2025 to Savannah River Pit Production from Savannah River Plutonium Operations.
[b] Congressional control title change requested for FY 2025 to Enterprise Pit Production Support from Enterprise Plutonium Support.

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs. FY 2023 Enacted	
				$	%
Capability Based Investments	**154,220**	**154,220**	**153,244**	**-976**	**-0.6%**
Warhead Assembly Modernization[a]	**0**	**0**	**34,000**	**+34,000**	**0%**
Total, Production Modernization	**5,116,705**	**5,116,705**	**5,877,692**	**+760,987**	**+14.9%**
Stockpile Research, Technology, and Engineering					
Assessment Science					
Primary Assessment Technologies	**154,507**	**154,507**	**183,716**	**+29,209**	**+18.9%**
Dynamic Materials Properties	**124,366**	**124,366**	**139,982**	**+15,616**	**+12.6%**
Advanced Diagnostics	**31,064**	**31,064**	**31,500**	**+436**	**+1.4%**
Secondary Assessment Technologies	**72,104**	**72,104**	**56,581**	**-15,523**	**-21.5%**
Enhanced Capabilities for Subcritical Experiments	**277,225**	**277,225**	**240,298**	**-36,927**	**-13.3%**
Hydrodynamic and Subcritical Experiment Execution Support	**142,402**	**142,402**	**182,173**	**+39,771**	**+27.9%**
24-D-513 Z-pinch Experimental Underground System (ZEUS) Test Bed Facilities Improvement (ZTBFI), NNSS	**0**	**0**	**0**	**0**	**0%**
17-D-640 U1a Complex Enhancements Project, NNSS	**53,130**	**53,130**	**73,083**	**+19,953**	**+37.6%**
Total, Assessmment Science	**854,798**	**854,798**	**907,333**	**+52,535**	**+6.1%**
Engineering and Integrated Assessments					
Archiving and Support	**43,950**	**43,950**	**39,679**	**-4,271**	**-9.7%**
Delivery Environments	**37,674**	**37,674**	**38,247**	**+573**	**+1.5%**
Weapons Survivability	**93,303**	**93,303**	**82,002**	**-11,301**	**-12.1%**
Studies and Assessments	**5,000**	**5,000**	**69,000**	**+64,000**	**+1280.0%**
Aging and Lifetimes	**87,260**	**87,260**	**60,072**	**-27,188**	**-31.2%**
Stockpile Responsiveness	**63,742**	**63,742**	**70,000**	**+6,258**	**+9.8%**
Advanced Certification and Qualification	**58,104**	**58,104**	**59,000**	**+896**	**+1.5%**
Total, Engineering and Integrated Assessments	**389,033**	**389,033**	**418,000**	**+28,967**	**+7.4%**
Inertial Confinement Fusion	**630,000**	**630,000**	**682,830**	**+52,830**	**+8.4%**

[a] Warhead Assembly Modernization is a new budget line beginning in FY 2025.

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs. FY 2023 Enacted	
				$	%
Advanced Simulation and Computing	**790,000**	**790,000**	**879,500**	**+89,500**	**+11.3%**
Weapon Technology and Manufacturing Maturation	**286,165**	**286,165**	**286,489**	**+324**	**+0.1%**
Total, Stockpile Research, Technology, and Engineering	**2,949,996**	**2,949,996**	**3,174,152**	**+224,156**	**+7.6%**
Academic Programs and Community Support	**111,912**	**111,912**	**128,188**	**+16,276**	**+14.5%**
Infrastructure and Operations					
Operating					
Operations of Facilities	**1,038,000**	**1,038,000**	**1,305,000**	**+267,000**	**+25.7%**
Safety and Environmental Operations	**162,000**	**162,000**	**191,958**	**+29,958**	**+18.5%**
Maintenance and Repair of Facilities	**651,617**	**651,617**	**881,000**	**+229,383**	**+35.2%**
Recapitalization[a]					
Infrastructure and Safety	**561,663**	**561,663**	**778,408**	**+216,745**	**+38.6%**
Subtotal, Recapitalization	**561,663**	**561,663**	**778,408**	**+216,745**	**+38.6%**
Total, Operating	**2,413,280**	**2,413,280**	**3,156,366**	**+743,086**	**+30.8%**
Construction					
Mission Enabling Construction					
25-D-511 PULSE New Access, NNSS	**0**	**0**	**25,000**	**25,000**	**0%**
25-D-XXX Plutonium Mission Safety & Quality Building LANL	**0**	**0**	**48,500**	**+48,500**	**0%**
23-D-519 Special Materials Facility, Y-12	**49,500**	**49,500**	**0**	**-49,500**	**-100.0%**
23-D-518 Plutonium Modernization Operations & Waste Management	**48,500**	**48,500**	**0**	**-48,500**	**-100.0%**
23-D-517 Electrical Power Capacity Upgrade, LANL	**24,000**	**24,000**	**70,000**	**+46,000**	**+191.7%**
22-D-514 Digital Infrastructure Capability Expansion, LLNL	**67,300**	**67,300**	**0**	**-67,300**	**-100.0%**
Total, Mission Enabling Construction	**189,300**	**189,300**	**143,500**	**-45,800**	**-24.2%**
Total, Infrastructure and Operations	**2,602,580**	**2,602,580**	**3,299,866**	**+697,286**	**+26.8%**

[a] Recapitalization (formerly Infrastructure and Safety).

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs. FY 2023 Enacted	
				$	%
Secure Transportation Asset					
Operations and Equipment	**214,367**	**214,367**	**236,160**	**+21,793**	**+10.2%**
Program Direction	**130,070**	**130,070**	**135,264**	**+5,194**	**+4.0%**
Total, Secure Transportation Asset	**344,437**	**344,437**	**371,424**	**+26,987**	**+7.8%**
Defense Nuclear Security					
Operations and Maintenance	**868,172**	**868,172**	**1,126,000**	**+257,828**	**+29.7%**
Construction	**3,928**	**3,928**	**54,000**	**+50,072**	**+1274.7%**
Total, Defense Nuclear Security	**872,100**	**872,100**	**1,180,000**	**+307,900**	**+35.3%**
Information Technology and Cybersecurity	**445,654**	**445,654**	**646,000**	**+200,346**	**+45.0%**
Legacy Contractor Pensions and Settlement Payments	**114,632**	**114,632**	**30,634**	**-83,998**	**-73.3%**
Subtotal, Weapons Activities	**17,512,123**	**17,512,123**	**19,848,644**	**+2,336,521**	**+13.3%**
Use of Prior Year Balances	-396,004	-396,004	0	+396,004	-100.0%
Total, Weapons Activities	**17,116,119**	**17,116,119**	**19,848,644**	**+2,732,525**	**+16.0%**

Weapons Activities
Funding by Congressional Control
Outyear Funding ($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Weapons Activities Appropriation				
Stockpile Management				
Stockpile Major Modernization				
B61-12 LEP	16,000	0	0	0
B61-13 LEP	42,000	28,000	6,000	0
W88 ALT 370	17,700	0	0	0
W80-4 LEP	1,154,046	1,112,085	972,513	838,961
W80-4 ALT-SLCM	0	0	0	0
W87-1 Modification Program	1,119,050	1,142,550	1,166,543	1,191,041
W93 Program	465,347	725,729	852,213	939,537
Future Strategic Warhead	0	0	0	0
Total, Stockpile Management	2,814,143	3,008,364	2,997,269	2,969,539
Stockpile Sustainment	1,422,315	1,473,370	1,504,311	1,535,901
Weapons Dismantlement and Disposition	61,492	68,884	70,331	71,808
Production Operations	857,155	897,743	916,595	935,844
Nuclear Enterprise Assurance	80,707	87,091	93,475	99,858
Total, Stockpile Management	5,235,812	5,535,452	5,581,981	5,612,950
Production Modernization				
Primary Capability Modernization				
Plutonium Modernization				
Los Alamos Plutonium Modernization				
Los Alamos Pit Production	945,480	972,088	1,018,468	1,105,595
21-D-512 Plutonium Pit Production Project, LANL	770,000	900,500	905,000	509,955
15-D-302 TA-55 Reinvestments Project Phase 3, LANL	12,942	0	0	0
07-D-220-04 Transuranic Liquid Waste Facility, LANL	0	0	0	0
04-D-125 Chemistry and Metallurgy Research Replacement Project, LANL	100,000	110,000	110,000	20,000
Total, Los Alamos Plutonium Modernization	1,828,422	1,982,588	2,033,468	1,635,550

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Savannah River Plutonium Modernization				
Savannah River Plutonium Operations	**139,510**	**164,986**	**186,679**	**212,302**
21-D-511 Savannah River Plutonium Processing Facility, SRS	**1,480,000**	**1,760,000**	**1,930,000**	**2,169,000**
Total, Savannah River Plutonium Modernization	**1,619,510**	**1,924,986**	**2,116,679**	**2,381,302**
Enterprise Plutonium Support	**143,869**	**124,410**	**124,473**	**123,916**
Total, Plutonium Modernization	**3,591,801**	**4,031,984**	**4,274,620**	**4,140,768**
High Explosives & Energetics				
High Explosives & Energetics	**107,173**	**106,565**	**112,938**	**113,728**
21-D-510 HE Synthesis, Formulation, and Production, PX	**0**	**0**	**0**	**175,924**
15-D-301 HE Science & Engineering Facility, PX	**5,907**	**0**	**0**	**0**
Total, High Explosives & Energetics	**113,080**	**106,565**	**112,938**	**289,652**
Total, Primary Capability Modernization	**3,704,881**	**4,138,549**	**4,387,558**	**4,430,420**
Secondary Capability Modernization	**718,101**	**764,887**	**877,989**	**906,875**
18-D-690 Lithium Processing Facility, Y-12	**189,009**	**193,000**	**198,000**	**266,000**
06-D-141 Uranium Processing Facility, Y-12	**596,021**	**354,885**	**251,000**	**0**
Total, Secondary Capability Modernization	**1,503,131**	**1,312,772**	**1,326,989**	**1,172,875**
Tritium and Domestic Uranium Enrichment	**637,911**	**670,130**	**674,684**	**679,402**
18-D-650 Tritium Finishing Facility, SRS	**0**	**0**	**103,435**	**200,000**
Total, Tritium and Domestic Uranium Enrichment	**637,911**	**670,130**	**778,119**	**879,402**
Non-Nuclear Capability Modernization				
Non-Nuclear Capability Modernization	**123,772**	**150,698**	**160,343**	**155,180**
22-D-513 Power Sources Capability, SNL	**115,000**	**130,000**	**23,713**	**0**
Total, Non-Nuclear Capability Modernization	**238,772**	**280,698**	**184,056**	**155,180**
Capability Based Investments	**146,478**	**161,417**	**162,533**	**163,671**

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Warhead Assembly Modernization				
Warhead Assembly Modernization	**59,336**	**54,965**	**116,298**	**117,112**
18-D-680 Material Staging Facility, PX	**0**	**0**	**0**	**0**
Total, Warhead Assembly Modernization	**59,336**	**54,965**	**116,298**	**117,112**
Total, Production Modernization	**6,290,509**	**6,618,531**	**6,955,553**	**6,918,660**
Stockpile Research, Technology, and Engineering				
Assessment Science				
Primary Assessment Technologies	**192,570**	**185,211**	**148,975**	**151,094**
Dynamic Materials Properties	**185,743**	**209,563**	**192,515**	**193,655**
Advanced Diagnostics	**13,210**	**13,907**	**14,143**	**14,381**
Secondary Assessment Technologies	**68,273**	**59,917**	**60,473**	**61,034**
Enhanced Capabilities for Subcritical Experiments	**242,718**	**181,156**	**133,926**	**64,720**
Hydrodynamic and Subcritical Experiment Execution Support	**180,963**	**164,413**	**165,761**	**166,923**
25-D-XXX LANSCE Modernization Project, LANL	**0**	**0**	**63,830**	**142,866**
17-D-640 U1a Complex Enhancements Project, NNSS	**64,000**	**50,000**	**0**	**0**
Total, Assessmment Science	**947,477**	**864,167**	**779,623**	**794,673**
Engineering and Integrated Assessments				
Archiving & Support	**39,739**	**40,791**	**41,144**	**41,449**
Delivery Environments	**38,320**	**39,130**	**39,400**	**39,661**
Weapons Survivability	**77,092**	**75,284**	**47,638**	**48,079**
Studies and Assessments	**69,859**	**74,851**	**74,846**	**75,411**
Aging & Lifetimes	**65,833**	**68,805**	**69,097**	**69,402**
Stockpile Responsiveness	**69,859**	**71,328**	**71,820**	**72,295**
Advanced Certification & Qualification	**59,041**	**60,297**	**60,712**	**61,114**
27-D-XXX Combined Radiation Environments for Survivability Testing, SNL	**0**	**50,000**	**115,000**	**181,394**
Total, Engineering and Integrated Assessments	**419,743**	**480,486**	**519,657**	**588,805**
Inertial Confinement Fusion	**681,906**	**704,857**	**705,226**	**705,470**

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Advanced Simulation and Computing	**879,295**	**879,915**	**861,265**	**891,002**
Weapon Technology and Manufacturing Maturation	**291,379**	**291,707**	**314,866**	**330,958**
Total, Stockpile Research, Technology, and Engineering	**3,219,800**	**3,221,132**	**3,180,637**	**3,310,908**
Academic Programs and Community Support	**121,851**	**121,851**	**121,851**	**121,851**
Infrastructure and Operations				
Operating				
Operations of Facilities	**1,385,000**	**1,415,000**	**1,445,000**	**1,495,000**
Safety and Environmental Operations	**183,460**	**183,362**	**183,164**	**184,239**
Maintenance and Repair of Facilities	**900,000**	**910,000**	**935,000**	**975,000**
Recapitalization[a]				
Infrastructure and Safety	**771,404**	**793,095**	**826,223**	**960,576**
Total, Recapitalization	**771,404**	**793,095**	**826,223**	**960,576**
Total, Operating	**3,239,864**	**3,301,457**	**3,389,387**	**3,614,815**
Construction				
Mission Enabling Construction				
29-D-XXX Protective Forces Support Facility, LANL	**0**	0	**0**	**98,700**
29-D-XXX Plutonium Engineering Support Building, LANL	**0**	0	**0**	**98,700**
28-D-XXX Plutonium Program Accounting Building, LANL	**0**	0	**48,700**	**0**
25-D-511 PULSE New Access, NNSS	**90,000**	**90,000**	**90,000**	**0**
23-D-517 Electrical Power Capacity Upgrade, LANL	**120,000**	**0**	**0**	**0**
Total, Mission Enabling Construction	**210,000**	**90,000**	**138,700**	**197,400**
Total, Infrastructure and Operations	**3,449,864**	**3,391,457**	**3,528,087**	**3,812,215**
Secure Transportation Asset				
Operations and Equipment	**274,073**	**316,645**	**312,603**	**314,803**
Program Direction	**138,100**	**140,996**	**149,113**	**150,152**
Total, Secure Transportation Asset	**412,173**	**457,641**	**461,716**	**464,955**

[a] Recapitalization (formerly Infrastructure and Safety).

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Defense Nuclear Security				
Operations and Maintenance	**1,140,647**	**1,202,656**	**1,254,054**	**1,280,007**
Construction	**10,100**	**0**	**0**	**0**
Total, Defense Nuclear Security	**1,150,747**	**1,202,656**	**1,254,054**	**1,280,007**
Information Technology and Cybersecurity	**704,934**	**748,463**	**752,087**	**798,334**
Legacy Contractor Pensions and Settlement Payments	**64,206**	**40,869**	**39,431**	**39,705**
Total, Weapons Activities	**20,649,896**	**21,338,052**	**21,875,397**	**22,359,585**

FY 2025 Integrated Priorities

The report accompanying the House Appropriations Committee fiscal year (FY) 2023 appropriations bill, H.R. 117-394, reiterated the requirement for an annual report detailing the Integrated Priorities for the Department of Energy's National Nuclear Security Administration's (DOE/NNSA) Weapons Activities.

> *The fiscal year 2021 Act directed the NNSA to provide with its budget request an Integrated Priorities Report (IPR). The report NNSA submitted does not meet the Committee's direction. In light of NNSA's increasing and highly interdependent workload, which requires significant and sustained investments to reconstitute key capabilities and materials, recapitalize infrastructure and construct new facilities, and modernize cyber and physical security, the Committee considers the IPR critical to its oversight role. NNSA is directed to provide an IPR that meets the direction in the fiscal year 2021 Act not later than 15 days after enactment of this Act and with the annual budget request thereafter.*

This section is intended to convey the requested FY 2025 Integrated Priorities information as rapidly as possible.

The overarching mission for DOE/NNSA's Weapons Activities is to deliver warheads that meet military requirements. To do this, DOE/NNSA must design, manufacture, certify, transport, maintain, and assess safe, secure, and reliable warheads for an effective nuclear deterrent. NNSA carries out this mission to maintain and modernize the nuclear stockpile through the application of unparalleled science, technology, engineering, and manufacturing capabilities and is currently recapitalizing much of the nuclear security enterprise. Priorities and schedules for the many elements of this multi-decade recapitalization effort are derived from warhead delivery schedules established with the Department of Defense (DoD). As the United States executes nuclear modernization efforts across all legs of the Triad, DOE/NNSA is diligently working to fulfill current DoD needs and to posture the nuclear security enterprise to be resilient and adaptive to emerging requirements.

Continued challenges in large construction projects have led to prioritization decisions—mostly in the form of deferring some projects and focusing funding and labor resources on others—that are reflected in the FY 2025 Budget Request for Weapons Activities. Accomplishing the Weapons Activities' mission requires the capabilities to:

- Maintain the current stockpile by executing annual surveillance, annual assessments, and exchange of limited life components;
- Design and procure or manufacture each warhead component (e.g., pits, high explosives, detonators, secondaries, canned subassemblies, radiation cases, non-nuclear components, safety, and security systems);
- Assess whether manufactured components are of "War Reserve" quality;
- Assess warheads against requirements under all stockpile-to-target sequence (STS) conditions;
- Perform research to develop advanced technologies that will meet evolving requirements;
- Safely and securely transport weapons, components, and special materials;
- Develop and maintain a workforce of stockpile experts whose judgment is an essential part of mission execution and foundational to the credibility of the deterrent;
- Defend the nuclear security enterprise against cyber and supply chain attacks; and
- Defend the nuclear security enterprise against physical attacks.

DOE/NNSA prioritizes specific elements of Weapons Activities with regard for the interdependencies across multiple portfolios and across the nuclear security enterprise in both the current execution year and the programming year, as well as the outyears. The prioritization of activities in each portfolio reflects a managed risk approach that considers many factors, including construction and staffing challenges. Emerging requirements with aggressive timelines necessitate rapid deployment of technologies, which can create technology maturation risks in project execution, especially for new capabilities. DOE/NNSA must identify and mitigate risks of potential single point failures in its systems in a timely manner to ensure ongoing work meets deliverable requirements. As risks are identified and sometimes realized, priorities must shift to implement mitigations. DOE/NNSA also continues to actively manage its carryover balances and considered its budget request in recognition of existing balances available to support FY 2025 work scope.

The FY 2025 President's Budget Request for Weapons Activities is needed to successfully execute six warhead modernization programs simultaneously; continue restoring production capability, including the capability to produce 80 plutonium pits per year (ppy) as close to 2030 as economically and technically feasible; continue modernizing design, assessment, certification, and production infrastructure; and maintaining the scientific tools and capabilities that are used every day to execute DOE/NNSA programs.

The FY 2025 request is fully informed by and supports further implementation of the 2022 Nuclear Posture Review and National Security Strategy and is also aligned with DoD requirements to ensure the U.S. nuclear deterrent continues to be safe, secure, reliable, and effective. The FY 2025 request focuses on the following Weapons Activities prioritized efforts aligned under a portfolio management structure to ensure that DOE/NNSA has all the required capabilities to design, build, deliver, maintain, and assess a safe, secure, reliable, and militarily effective nuclear stockpile in support of the Nation's nuclear deterrent.

- **Support the active stockpile:** The FY 2025 President's Budget Request prioritizes stockpile maintenance activities that, if delayed, would cause operational issues. DOE/NNSA is prioritizing stockpile sustainment activities to execute maintenance, limited life component exchanges (LLCE), minor alterations, surveillance, assessment, surety studies and capability development, and management activities for all enduring weapons systems in the stockpile. The FY 2025 funding request will be applied to activities including:
  - Surveillance program activities for all weapon systems using data collected from flight tests, laboratory tests, and component evaluations to assess stockpile reliability, performance, and safety.
  - Annual Assessment activities for all weapon systems including the in-depth testing and analysis of systems, subsystems, and components.
  - Development, qualification, production, and delivery of all limited life components (LLCs) for stockpile systems.
  - Design, development, qualification, and production of weapon surety capabilities to ensure U.S. weapons are safe, secure, and under positive control;
  - Continue implementation of enhanced capability shipping configurations;
  - Product realization development, digital engineering tool development and deployment, multi weapons surveillance (MWS) activities, and material procurement requirements for MWS;
  - Full-scale development for Joint Test Assembly (JTA) flight test vehicle development and production;
  - Expansion of the Nuclear Enterprise Assurance program across each of the eight NNSA sites to actively manage subversion risks.

- **Execute warhead modernization programs:** The requested funding supports the current stockpile modernization activities (six simultaneous major warhead modernization or acquisition programs) to meet production schedules and DoD requirements. NNSA also continues to engage with DoD to plan and execute the future program of record, including directed Sea-Launched Cruise Missile-Nuclear (SLCM-N) activities. Funding requested for FY 2025 reflects resources prioritized for:
  - B61-12 Life Extension Program (LEP): Continue Phase 6.6, Full-Scale Production, activities and deliver B61-12 weapons to DoD in support of delivery dates.
  - B61-13 Variant: Conduct the B61-13 *Phase 6.3 and 6.4 (Development/Production Engineering)* activities to replace a subset of planned B61-12s with the B61-13. The B61-13 will take advantage of the current, established production capabilities supporting the B61-12.
  - W88 Alteration (Alt) 370: Continue Phase 6.6, Full-Scale Production, activities and deliver W88 Alt 370 weapons to DoD in support of delivery dates.
  - W80-4 LEP: Continue with Phase 6.4, Production Engineering, activities for the W80-4 LEP in support of the Air Force Long Range Stand-Off (LRSO) program, including joint testing with the Air Force LRSO Program.
  - While a dedicated line item for the Sea Launched Cruise Missile (SLCM) is not currently included in the FY 2025 request, NNSA is proposing $1,165M for the W80-4 warhead which the NDAA associates with SLCM-N. NNSA will comply with the NDAA requirement for the W80-4 SLCM and will work with the Navy to execute in a manner that provides the most deterrence value for the least risk to the modernization program, the production enterprise, and the military.

- W87-1 Modification Program: Continue Phase 6.3, Development Engineering, advancing technology and manufacturing readiness levels for system components, maturing their designs in preparation for the system baseline design review, and performing joint testing with the Air Force Sentinel and Mk21A programs.
- W93 Program: Continue Phase 2, Feasibility Study, to ascertain and down-select major subsystem designs and components.

- **Reestablish and modernize production infrastructure and capabilities:** In FY 2023, NNSA realized that many large construction projects faced significant cost and schedule increases due to both market conditions (e.g., tight labor market, supply chain delays, and construction escalation) and inherent challenges at NNSA sites such as aging infrastructure, limited capacity in electrical and water utilities, synchronization of multiple site projects, contractor performance, inadequate early phase planning, design challenges when adapting existing facilities for different purposes, and optimistic cost estimates. Given these realities, DOE/NNSA has adopted a strategy of focusing resources (funding and labor) on a reduced number of high-priority projects, while decreasing the resources allocated to other projects, which will be delayed relative to previous plans. The FY 2025 budget request continues to reflect this strategy and the difficult prioritization decisions DOE/NNSA has made, while seeking to position the nuclear security enterprise's infrastructure to be as adaptable and resilient as possible to meet current and future DoD production requirements.
  - After DOE/NNSA analyzed planned projects at each site, the High Explosives Synthesis, Formulation and Production (HESFP) facility at Pantex, and the Tritium Finishing Facility (TFF) at SRS were both paused to prioritize projects that provide greater support to delivery of warheads on the schedule needed by the military.
  - The High Explosive Synthesis, Formulation, and Production (HESFP) facility cannot be completed in time to deliver war-reserve insensitive high explosive (IHE) for the W80-4 warhead or for the first several years of W87-1 warhead production. The facility has reached 100 percent design but has not begun construction. Therefore, the project is at an opportune time for a pause and can begin construction upon resumption of the project. Deferring HESFP project execution to FY 2027 will still allow completion in time to meet the IHE needs of later warhead modernization programs (the FY 2025 budget request does not seek funding in FY 2027 or FY 2028, but carryover from prior years will allow resumption of project execution in FY 2027). Delaying the construction of HESFP has the added benefit of relieving competition for limited construction resources at Pantex, which will allow completion of on-going construction projects at Pantex, such as the High Explosives Science and Engineering Facility (HESE).
  - Similarly, the TFF project is paused through FY 2027. This pause maintains the nuclear security enterprise's capacity to execute existing, high priority construction projects and to ensure design resources and critical personnel are available to execute the Savannah River Plutonium Processing Facility (SRPPF) project. To accommodate delays to TFF, NNSA is making additional investments in the H-Area Old Manufacturing Facility at SRS to maintain mission capabilities.
- **Plutonium Pit Production:** Projects and activities associated with reestablishing necessary pit production capabilities remain DOE/NNSA's highest infrastructure priority in FY 2025 and beyond. The Office of Production Modernization funds the equipment, facilities, and personnel required to reestablish the Nation's capability to produce 80 ppy as close to 2030 as economically and technically feasible. FY 2025 funding will support process development and qualification activities to move toward the first War Reserve (WR) pit at Los Alamos National Laboratories, expected in FY 2025, and Plutonium Modernization activities at SRS. The priority actions for plutonium pit production in FY 2025 are:
  - Applying resources to the Los Alamos Pit Production line to continue to support engineering evaluations and the production of the first WR plutonium pit, in concert with increased equipment purchases/installation activities and the hiring, training, and qualification of additional staff to support the WR pit production ramp-up.
  - Supporting the Los Alamos Plutonium Pit Production Project (LAP4) to progress the new production equipment installation within the 30B subproject, and the 30R equipment subproject, and continue the removal of legacy equipment in PF-4, among other ongoing subprojects in support of rate production, while acknowledging the use of carryover to address FY 2025 project requirements.
  - Pursuing activities at SRPPF to mature the design of the main process building, which includes production equipment and gloveboxes, safety and security systems, facility utilities, and support infrastructure. Other supporting activities will continue to focus on the design of subprojects for utilities/site preparation, the sand filter, administrative buildings, the high-fidelity training, and operations center, as well as continued early site work such as removal of old equipment, procurements of long lead equipment items, and early site work on several other subprojects.

- **Modernization and production programs for other materials and components:** In FY 2025, DOE/NNSA will prioritize production of materials and components to address the critical needs of the deployed stockpile, ongoing modernization programs, and capacity to adapt to future deterrent needs. This includes tritium production in support of the nuclear weapons stockpile and other national programs; modernizing uranium operations, delivering canned subassemblies and components needed to maintain the stockpile, and supporting the U.S. Navy's nuclear propulsion program; maintaining production of the Nation's enriched lithium supply; supporting qualification of high explosives; and modernizing production of non-nuclear components required for both the active stockpile and warhead modernization programs.
  - Funding requested for the Uranium Processing Facility (UPF) reflects continued priority given to completing this important project. DOE/NNSA continues to mitigate impacts caused by the delay in the completion of UPF.
  - FY 2025 funds will be used to continue irradiation of Tritium Producing Burnable Absorber Rods and other operations in support of tritium production requirements.
  - Funding for Domestic Uranium Enrichment (DUE) will continue to support strategies to accelerate demonstration and deployment of enrichment technologies.

- **Develop and sustain strong science, technology, and engineering efforts to support the stockpile and the design, assessment, and certification infrastructure which underpin the deterrent:** The funding Request in FY 2025 supports research, development, technology, and engineering efforts for current and future stockpile enablement, production enablement and modernization, and capability sustainment. Resources support the scientific foundation for science-based stockpile decisions and actions, including the capabilities, tools, and components needed to enable assessment of the active stockpile and certification of warhead modernization programs without nuclear explosive testing. Design, assessment, and certification infrastructure provides capabilities to support the current and future stockpile through advanced modeling and simulation, subcritical and high energy density physics experiments, and other scientific efforts. Scientific capabilities also enable the development and maturation of component and manufacturing technologies for future insertion into the stockpile based on DoD needs, schedules, and requirements. Funding in this area also supports the development of new materials, technologies, and processes to modernize nuclear systems and production complex, as well as several experimental testbed capabilities.
  - FY 2025 funding will support experiments focused on design and production requirements for validation of modernized weapons designs and the milestones identified in the National Plutonium Aging Strategy. Funding also maintains support to mission-critical activities at multiple facilities, including JASPER, National Ignition Facility, TA-55 gas gun, and requisite plutonium shots on Z.
  - FY 2025 funding will be applied to Advanced Simulation and Computing priorities of transitioning the first NNSA Exascale computer (El Capitan) to classified operations; maintaining facility upkeep, code modernization, and system recapitalization; and continuing to support increased simulation workloads for the nuclear weapons mission.
  - Funding for Weapons Technology and Manufacturing Maturation reflects prioritization of technology development for warhead modernization programs.

- **Continue Assessing Concepts to Meet Future Threats:** FY 2025 funds requested for the Studies and Assessments account will support continued development of concepts to fill potential deterrence gaps and meet future threats with modern U.S. nuclear capabilities. NNSA will continue efforts in response to the Nuclear Weapons Council-directed Phase 1 studies for Hard and Deeply Buried Targets (HDBT) and Next Generation Re-entry Vehicles (NGRV). NNSA, in conjunction with DoD, will identify warhead function needs, evaluate potential weapon design concepts against technical and programmatic risks, and determine designed-informed approaches.

- **Address gaps in experimental and computational capabilities:** FY 2025 funds requested for the Stockpile Research Technology and Engineering account will support continued implementation of the Enhanced Capabilities for Subcritical Experiments (ECSE) project and DOE/NNSA's first Exascale high-performance computing system. These two capabilities will enable essential stockpile stewardship activities for many years. Three projects that will provide long-awaited capabilities for subcritical experiments underground in Nevada at the PULSE facility—Advanced Sources and Detectors (ASD-Scorpius), Z-pinch Experimental Underground System (ZEUS Test Bed), and the U1a Complex Enhancements Project—face cost and schedule challenges similar to those of other major construction projects, for

similar reasons. The FY 2025 Request includes funding for these high-priority projects. The FY 2025 Request also supports investment in key diagnostic and pulsed power activities as well as development of high-priority experimental platforms and materials.

- **Hire and retain the workforce necessary to achieve deliverables and address retirements:** Requested funds will be used to recruit, invest in, and nourish a high-performing, diverse, and flexible workforce that can meet the unique policy, technical, and leadership needs of the nuclear security mission today and in the future.
  - The challenges of modernizing the Nation's nuclear stockpile demand a strong and diverse base of expertise and educational opportunities in specialized technical areas that uniquely contribute to nuclear stockpile stewardship.
  - The Academic Programs and the Community Capacity Building Program are designed to attract the brightest minds to the national security enterprise's workforce as well as support the communities around its laboratories, plants, and sites. Academic programs in science and engineering disciplines of critical importance to the nuclear security enterprise, such as nuclear science, radiochemistry, materials at extreme conditions, high energy density science, advanced manufacturing, and high-performance computing. The Community Capacity Building Program will support underserved communities, including Tribal Nations and rural areas, affected by the activities at NNSA sites.

- **Secure transport of nuclear materials and warheads:** Funding requested for the Secure Transportation Asset (STA) program prioritizes shipment operations and efforts to modernize and sustain transportation assets, such as the Mobile Guardian Transporter (MGT), and supports training, equipment, facilities, and salaries for Federal Agents (FA). Secure transportation activities must maintain assets to sustain convoy safety and security to support missions based on changing customer needs and current and future threats. STA is facing continuing hiring and sustainment challenges within the FA workforce. STA executes three Nuclear Material Courier Basic courses each year and is implementing initiatives to attract, hire, and maintain the FA workforce to fully support the Nuclear Security Enterprise.

- **Uphold strong proactive maintenance and recapitalization programs:** FY 2025 funding supports the plans, prioritization, and construction of state-of-the-art facilities and infrastructure to support all DOE/NNSA programs, except for new complex-construction projects, which are funded by the programs. The FY 2025 Request provides funding for activities to enable plutonium pit production, expand capacity at the Kansas City National Security Campus, and address infrastructure modernization throughout the complex.
  - Resources will also continue to be applied to recapitalization projects to improve the condition and extend the design life of structures, capabilities, and systems to meet program demands; reduce future operating costs by replacing older facilities with new, more efficient facilities; and reduce safety, security, environment, and program risk.

- **Implement physical security systems and measures across the complex:** The FY 2025 Request prioritizes efforts to fill positions in key security program areas and reflects increased security needs associated with known mission growth in weapons programs across the complex, including pit production at LANL, and efforts to support needs across the enterprise. Mission growth across the complex continues to drive the need for increased security resources. Security staff must be trained and cleared in advance to meet forecasted schedules.

- **Sustain and improve information technology systems and cybersecurity to meet directives and other requirements:** FY 2025 funds for Information Technology (IT) and Cybersecurity will be used to provide the nuclear security enterprise's workforce with a more modern and secure set of capabilities including unified communication, agile cloud infrastructure, and next-generation collaboration services. Funds will support deployment of emerging technology, leading-edge operational technology, continued cyber technology and security upgrades, and applying artificial intelligence/machine learning to improve supply chain security processes and inform risk-based decisions.

Stockpile Management

Overview

The mission for the Stockpile Management program is to maintain a safe, secure, reliable, and effective nuclear weapons stockpile. The Stockpile Management program encompasses five major subprograms that directly support the Nation's nuclear weapons stockpile. In FY 2025, **Stockpile Major Modernization** is scheduled to continue to execute Phase 6.6 (*Full-Scale Production*) activities including completion of Last Production Unit (LPU) for the B61-12 Life Extension Program (LEP) and W88 Alteration (ALT) 370; complete the B61-13 (*Phase 6.3 and 6.4 (Development/Production Engineering)*; continue Phase 6.4 (*Production Engineering*) activities for the W80-4 LEP; continue Phase 6.3 (*Development Engineering*) activities for the W87-1 Modification Program; and continue and complete Phase 2 (*Feasibility Study and Design Options)* for the W93 Program. The W93 will commence Phase 2A (Feasibility and Cost Study). While a dedicated line item for the Sea Launched Cruise Missile (SLCM) is not currently included in the FY 2025 request, NNSA is proposing $1,165M for the W80-4 warhead which the NDAA associates with SLCM-N. NNSA will comply with the NDAA requirement and will work with the Navy to execute in a manner that provides the most deterrence value for the least risk to the modernization program, the production enterprise, and the military. **Weapons Dismantlement and Disposition (WDD)** will provide safe and secure dismantlement of nuclear weapons and components and continue legacy component disposition. **Production Operations (PO)** will provide site-specific, production-enabling capabilities to enable weapons production, including process improvements and investments focused on increased efficiency of production performance. **Nuclear Enterprise Assurance (NEA)** will prevent, detect, and mitigate potential consequences of subversion, both to the stockpile and to the associated capabilities to design, produce, and test nuclear weapons.

Major Subprogram Overview:

Stockpile Major Modernization updates the Nation's nuclear stockpile with modern components and designs while replacing aging or obsolete components to ensure continued service life, as well as enhancing security and safety features.

Stockpile Sustainment directly executes maintenance, limited life component exchanges, minor alterations, surveillance, assessment, surety studies and capability improvements, management activities, and support of weapons until they are dismantled) for all enduring weapons systems in the stockpile.

Weapons Dismantlement and Disposition (WDD) provides weapon dismantlements, safety studies on retired systems, material characterization, legacy component disposition, and the disposal of retired weapon parts. This includes activities for technical analysis needed to dismantle and safely store weapons being removed from the stockpile.

Production Operations (PO) is a multi-weapon system manufacturing-based program that drives individual site production capabilities and capacity for the stockpile sustainment and modernization programs, including limited life component production, weapon assembly, and disassembly operations. Production Operations scope covers sustainment of labor required for weapon systems capabilities that enable individual weapon production and are not specific to one material stream.

Nuclear Enterprise Assurance (NEA) ensures the Nuclear Security Enterprise (NSE) actively manages subversion risks to the nuclear weapons stockpile and associated design, production, and testing capabilities. Digital technologies introduce new vulnerability characteristics and multiple new susceptible pathways that if compromised can produce unacceptable physical impacts to safety, the environment, weapon performance, and loss of capabilities.

Stockpile Management
Funding ($K)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
Stockpile Management					
Stockpile Major Modernization					
B61-12 LEP	672,019	672,019	27,500	-644,519	-95.9%
B61-13 LEP	0	0	16,000	+16,000	+0.0%
W88 ALT 370	162,057	162,057	78,700	-83,357	-51.4%
W80-4 LEP	1,122,451	1,122,451	1,164,750	+42,299	+3.8%
W80-4 ALT-SLCM	20,000	20,000	0	-20,000	-100.0%
W87-1 Modification Program	680,127	680,127	1,096,033	+415,906	+61.2%
W93 Program	240,509	240,509	455,776	+215,267	+89.5%
Total, Stockpile Major Modernization	**2,897,163**	**2,897,163**	**2,838,759**	**-58,404**	**-2.0%**
Stockpile Sustainment	**1,321,139**	**1,321,139**	**1,356,260**	**+35,121**	**+2.7%**
Weapons Dismantlement and Disposition	**56,000**	**56,000**	**54,100**	**-1,900**	**-3.4%**
Production Operations	**630,894**	**630,894**	**816,567**	**+185,673**	**+29.4%**
Nuclear Enterprise Assurance	**48,911**	**48,911**	**75,002**	**+26,091**	**+53.3%**
Total, Stockpile Management	**4,954,107**	**4,954,107**	**5,140,688**	**+186,581**	**+3.8%**

Stockpile Management
Outyear Funding ($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Stockpile Management				
Stockpile Major Modernization				
B61-12 LEP	16,000	0	0	0
B61-13 LEP	42,000	28,000	6,000	0
W88 ALT 370	17,700	0	0	0
W80-4 LEP	1,154,046	1,112,085	972,513	838,961
W80-4 ALT-SLCM	0	0	0	0
W87-1 Modification Program	1,119,050	1,142,550	1,166,543	1,191,041
W93 Program	465,347	725,729	852,213	939,537
Total, Stockpile Major Modernization	**2,814,143**	**3,008,364**	**2,997,269**	**2,969,539**
Stockpile Sustainment	**1,422,315**	**1,473,370**	**1,504,311**	**1,535,901**
Weapons Dismantlement and Disposition	**61,492**	**68,884**	**70,331**	**71,808**
Production Operations	**857,155**	**897,743**	**916,595**	**935,844**
Nuclear Enterprise Assurance	**80,707**	**87,091**	**93,475**	**99,858**
Total, Stockpile Management	**5,235,812**	**5,535,452**	**5,581,981**	**5,612,950**

Stockpile Management
Explanation of Major Changes ($K)

	FY 2025 Request vs FY 2023 Enacted
Stockpile Management	
Stockpile Major Modernization: The decrease represents an alignment with B61-12 LEP plans for component delivery of LPU and system level LPU, and the completion of component production for the W88 ALT 370.	**-58,404**
Stockpile Sustainment: The increase represents a ramp-up in planned activities as the B61 Stockpile System program has effectively planned and positioned to accept and execute the increase required scope associated with the B61-12 transition to Stockpile Sustainment; the ramp-up in production readiness activities for the W76-1/2 Mk4B in support of a First Production Unit (FPU) in FY 2026 and ALT 939 Integrated Surety Architecture; and in MWS the ramp-up for the PRIDE enterprise software development and deployment effort, surveillance activities to support major modernization activities transitioning to stockpile sustainment, and Integrated Surety Architecture (ISA) activities.	**+35,121**
Weapons Dismantlement and Disposition: The decrease represents reduced levels for Legacy component disposition and characterization.	**-1,900**
Production Operations: The increase represents the expanded engineering and quality assurance processes responsive to increased non-nuclear component production requirements, and support for Programmatic Equipment Maintenance. This scope addresses the increased need for hiring, equipment service contracts, procurement of critical spare parts, equipment, & components that reduces risk of increasing Corrective Maintenance and production downtime, and sustainment for Smart Factory deployed for parts tracking.	**+185,673**
Nuclear Enterprise Assurance: The increase represents the maturation of the NEA program as sites, laboratories, and plants institutionalize NEA processes and policies; procure and develop tools and capabilities; and train the workforce. This scope includes: investments in staff, software, and equipment for NEA Capability Centers; upgrades to countersubversion analysis laboratories equipment and methods; establishment of nuclear weapon cybersecurity policies and requirements throughout the weapons acquisition process; and development of NEA workforce pipelines, professional qualification programs, and knowledge preservation programs.	**+26,091**
Total, Stockpile Management	**+186,581**

Stockpile Management
Stockpile Major Modernization

Overview

The Stockpile Major Modernization program updates the lifetime of the Nation's nuclear stockpile with modern components and designs while addressing required updates, replacing aging/obsolete components to ensure continued service life, and enhancing security and safety features. Stockpile Major Modernization is the stockpile management subprogram necessary to address updated DOD requirements for potentially new capabilities or extending the expected life of stockpile systems for an additional 20 to 30 years. NNSA, in conjunction with DOD, executes stockpile modernization following the Phase X/6.X process guidelines, which provide a framework to conduct and manage refurbishment activities for potentially new or existing weapons. Phase 1/6.1 (*Concept Assessment*) should provide sufficient information for the Nuclear Weapons Council (NWC) to authorize Phase 2/6.2 (*Feasibility Study and Design Options*). Follow-on phases include Phase 2A/6.2A (*Design Definition and Cost Study*), Phase 3/6.3 (*Development Engineering*), Phase 4/6.4 (*Production Engineering*), Phase 5/6.5 (*First Production*) and Phase 6/6.6 (*Full-Scale Production*). For the purposes of this justification, the term "refurbishment" refers to all nuclear weapon major alterations and modifications, including Life Extension Programs (LEP).

Description

B61-12 LEP

The B61-12 LEP refurbishes, reuses, or replaces all the bomb's nuclear and non-nuclear components to extend the service life of the B61 by at least 20 years and to improve the bomb's safety, effectiveness, and security. This life extension program addresses all age-related issues of the bomb, and enhances its reliability, field maintenance, safety, and use control. With these upgrades and the addition of an Air Force-supplied Tail Kit Assembly, the B61-12 LEP will consolidate and replace three B61 weapon designs: 3, 4, and 7. When fielded, the B61-12 LEP will have greater accuracy provided by the modern tail kit with no overall change in military characteristics. In June 2016, NNSA authorized the program to transition into Phase 6.4. At the gate review in September 2020, with a follow-on memorandum in November 2020, NNSA authorized the program to transition into Phase 6.5 and the Air Force conducted Final Design Review and Acceptance Group (FDRAAG). In FY 2022, NNSA achieved system level FPU at the Pantex Plant. In June of 2022, the Nuclear Weapons Council (NWC) authorized the B61-12 LEP program to enter Phase 6.6. The program completion date is planned for FY 2026.

B61-13 LEP

The B61-13 LEP is a modern variant of the B61 nuclear gravity bomb. The B61-13 includes modern safety, security, and accuracy features of the B61-12 and replaces some of the B61-7s in the current stockpile. The program planned completion is in FY 2028.

W88 ALT 370

The W88 ALT 370 Program extends the W88 lifetime by modernizing the arming, fuzing, and firing (AF&F) assembly, improving surety, and incorporating a lightning arrestor connector. It also provides required logistical spares for sustaining the life of the system. During development, the arming and fuzing portion of the AF&F assembly was designed to be forward compatible with Air Force Fuze requirements, maintaining joint capability during production. The maintenance programs for neutron generator (NG) and gas transfer system (GTS) replacement receive funding under the W88 enduring stockpile system. Limited Life Component (LLC) replacement will be performed concurrently with the ALT 370 conversion. In November 2014, the NWC authorized replacement of the Conventional High Explosive (CHE) and associated materials on the W88 coincident with ALT 370 activities, referred to as CHE Refresh. The CHE Refresh scope is included in the W88 ALT 370 Program and leverages existing tests to the maximum extent possible to minimize costs and reduce logistical impacts to the Navy. In February 2017, NNSA authorized the program to transition into Phase 6.4. Phase 6.5 authorization occurred in November 2020, and NNSA completed the reentry body assembly FPU in July 2021. The NWC formally accepted the W88 ALT 370 as a standard stockpile item in December 2021 and authorized entrance to Phase 6.6 in June 2022. The last production unit of the reentry body assembly is planned for September 2025 with the program completion date (including REST [Retrofit Evaluation System Test] and closeout activities) planned for FY 2026. No new funding is planned for FY 2027, FY 2028, or FY 2029.

W80-4 LEP

The W80-4 LEP extends the life of the legacy W80 warhead for use in the Air Force Long Range Stand-Off (LRSO) cruise missile. The LRSO is the replacement for the current, aging Air-Launched Cruise Missile (ALCM). The life extension program will integrate the warhead with the replacement missile platform and address warhead component aging concerns as well as military requirements for reliability, service life, field maintenance, and surety. The program established key design requirements for this LEP to include using insensitive high explosives for the primary, enhancing surety, and developing the warhead/missile interface in parallel with the Air Force. In February 2019, the NWC approved the W80-4 LEP transition to Phase 6.3 in support of the Air Force LRSO missile program. Due to delays associated with staffing and technical issues, the NWC formally approved a warhead FPU shift from FY 2025 to FY 2027 on June 29, 2022. This shift maintains margin between NNSA FPU and Air Force Initial Operational Capability (IOC), providing NNSA high confidence of supporting Air Force LRSO weapon IOC early in the 2030s. Phase 6.4 Production Engineering started in Q2 FY 2023.

W87-1 Modification Program

The W87-1 Modification Program will replace the W78 warhead and support fielding on the Air Force Sentinel, formerly known as Ground Based Strategic Deterrent (GBSD) missile system, between 2031 and 2033. The W78 is one of the oldest warheads in the stockpile and the W87-1 Modification Program provides improvement in warhead security, safety, and use control. The W87-1 Modification Program is based on a modified design of the W87-0 and will be fielded in the Mk21A reentry vehicle. The FPU is planned in 2032.

W93 Program

The W93 Program was established to meet requirements set by the DOD to augment Navy forces with a survivable weapon deployable on the Ohio-class and Columbia-class submarines. The W93 program modernization activity uses a joint NNSA-DOD Phase 1-7 acquisition process which encompasses the Life-Cycle Acquisition for new nuclear weapon design, development, production, sustainment, and dismantlement activities. In FY 2022 the W93 program concluded Phase 1 that evaluated warhead architectures and available technologies against potential range of desired attributes, draft military characteristics, and known constraints. In FY 2023, work commenced on Phase 2 to further refine design and production concepts. The program began to conduct technical trade analyses, evaluating component down-selects based on refined Military Characteristics, NNSA and DOD requirements, resources, and timelines. FY 2024 feasibility assessments will not only inform the NNSA W93 system architecture but will also inform DOD development activities associated with the Mk7 reentry body. The W93 is planned to be deployed on the Mk7 reentry body. The W93 and Mk7 teams are collaborating with the United Kingdom in a parallel design, development, and production of the Replacement Warhead, RW/Mk7.

Highlights of the FY 2025 Budget Request

B61-12 LEP

- Maintain full-scale system-level production at Pantex Plant and deliver B61-12 weapons to the DOD.
- Achieve System Last Production Unit (LPU).
- Execute steady state production for components and complete life of program demand.
- Complete Retrofit Evaluation System Testing Flight and Laboratory events in support of Annual Assessment.
- Execute aircraft compatibility testing in support of certification with the B-21.

B61-13 LEP

- Complete development engineering activities including releasing final design definitions.
- Complete Canned Subassembly development builds.

W88 ALT 370

- Complete component and system-level production at steady-state rates.
- Complete W88 ALT 370 system conversions (last production unit).
- Continue coordinating closely with the Navy to ensure a fully integrated schedule of hardware needs and deliveries.
- Execute REST surveillance scope.

W80-4 LEP

- Continue with Phase 6.4 Production Engineering activities for the W80-4 LEP in support of the Air Force LRSO program.
- Finalize Component Final Design Reviews.
- Continue joint testing with Air Force Long Range Stand-Off (LRSO) Program.
- Complete FPU for a significant number of components.
- Conduct System Production Definition and Documentation Review.
- Deliver Hazards of Electromagnetic Radiation to Ordnance (HERO) Test Warhead to United States Air Force.
- Complete Nuclear Safety Design Information (NSDI) Preliminary Safety Study (PSS).

W87-1 Modification Program

- Continue component baseline design reviews.
- Conduct qualitative risk identification and impact analysis and mature quantitative risk analysis process.
- Conduct joint testing with Air Force Sentinel (formerly Ground Based Strategic Deterrence) and Mk21A programs.

- Continue Phase 6.3 and advance design maturity and manufacturing readiness levels, and progress component and sub-system designs in preparation for the system baseline design review.
- Continue component development builds and testing.

W93 Program
- Continue Phase 2 to ascertain and down-select major subsystem designs and components.
- Complete NNSA technical documents as part of Phase 2 study and design options.
- Transition down selected advanced technologies into the W93 program of record.
- Continue coordination with the DOD-sponsored aeroshell.
- Conduct hydro tests in FY 2025.
- Complete Phase 2.
- Complete System Feasibility Gate.
- Complete Component Feasibility Gates.
- Release Design Definition Packages.
- Commence Phase 2A.
- Execute Follow on Commanders Evaluation Test (FCET-70) and Atrax supplemental flight test.
- Support the W93 Project Officers Group (POG) structure including subcommittees, working groups, and task teams.
- Continue coordination with the UK on their Replacement Warhead.
- Support Requirements Program Document (RPD) shift that is driving earlier development activities for canned sub-assembly (CSA), Mechanisms, Firing Set Assembly (FSA), Arming Fusing and Firing (AF&F) Subsystem, COTS and Material Procurements, and Test and Evaluation.

FY 2026 – FY 2029 Key Milestones
B61-12 LEP
- Complete life of program component overbuilds (FY 2026).
- Complete program closeout activities (FY 2026).

B61-13 LEP
- Conduct System Final Design Review (FDR) (FY 2026).
- Complete First Production Unit (FY 2026).
- Complete life of program component builds (FY 2026).
- Complete Last Production Unit (FY 2028).
- Complete program close out activities (FY 2028).

W88 ALT 370
- Execute REST surveillance scope.
- Conduct program closeout activities (FY 2026).

W80-4 LEP
- Conduct joint testing with Air Force Long Range Stand-Off (LRSO) Program (FY 2025 – FY 2028).
- Deliver and test final Aircraft Maintenance and Capability (AMAC) (FY 2026).
- Receive Phase 6.5 Authorization (FY 2027).
- Produce First FPU (FY 2027).
- Complete final Development Review and Acceptance Group (FDRAAG) (FY 2027).
- Complete final Weapon Development Report (FWDR) (FY 2028).
- Conduct System and Warhead Production Steady State Gate (FY 2028).
- Receive Phase 6.6 (FY 2028).
- System Production Review (FY 2028).

W87-1 Modification Program
- Conduct W87-1 Joint Test Assembly (JTA) development flight tests in conjunction with the Air Force.

- Conduct Sentinel environmental flight tests with the Mk21A in conjunction with the Air Force.
- Complete System Baseline Design Review (FY 2026).
- Complete Baseline Cost Report (FY 2026).
- Enter Phase 6.4 (FY 2027).

W93 Program
- Continue coordination with the DOD-sponsored aeroshell.
- Support RPD Shift that is driving earlier development activities for CSA, Mechanisms, FSA, AF&F Subsystem, COTS and Material Procurements, and Test and Evaluation (FY 2026).
- Complete Phase 2A, including the Phase 2A report and the Weapon Design and Cost Report (WDCR) (FY 2026).
- Obtain Phase 3 Authorization from the Nuclear Weapons Council (FY 2026).
- Conduct Conceptual Design Review (CDR) and Gates (FY 2027).
- Continue experimental test campaigns: hydrodynamic, ground, NNSA and Navy flight tests (FY 2027-2029).
- Execute early component Baseline Design Reviews (BDR) (FY 2029).

FY 2023 Accomplishments
B61-12 LEP
- Completed ship level quantities to support DOD ship schedules.
- Completed four System Retrofit Evaluation System Test (REST) joint flight tests on PA-200 and B-2 aircraft platforms.
- Completed 15 System REST laboratory tests at the Weapon System Evaluation Test Lab.
- Delivered the High-Fidelity Canned Subassembly for a FY 2025 Performance Evaluation Test Unit System flight test.

B61-13 LEP
- N/A.

W88 ALT 370
- Executed full-scale component and system-level production.
- Delivered all Navy commitments on schedule, including system and joint test assembly deliverables.
- Met all REST surveillance requirements and supported Navy testing.

W80-4 LEP
- Completed Program Protection Plan (PPP).
- Completed Nuclear Explosive Package (NEP) Certification Plan.
- Completed Draft Nuclear Weapon Subsystem Test Plan (NWSSTP).
- Completed Draft Preliminary Weapon Development Report (required for Phase 6.4 entry).
- Continued coordinated flight test requirements with the Air Force.

W87-1 Modification Program
- Conducted component Conceptual Design Reviews and the W87-1 System Conceptual Design Review.
- Completed several life-of-program material procurements.
- Continued coordinated flight test requirements with the Air Force.
- Released the cost of the program through the Weapon Design and Cost Report.
- Entered Phase 6.3, Development Engineering.

W80-4 ALT-SLCM
- Coordinated activities with DOD to explore designs that are system agnostic and could support a variety of delivery platforms.

W93 Program
- Conducted Technology Readiness Assessments for W93 component options.
- Conducted Surety Architecture Analysis of Alternatives (AOA).

- Completed two design iterations of Mk7 Aeroshell with the Navy.
- Developed intraorganizational Interface Requirements Agreements (IRAs) and Technology Transfer Agreements (TTAs) to mature candidate technologies, capabilities, and infrastructure.
- Developed a W93 System Reference Design.
- Published LANL/SNL draft physical and functional ID.
- Developed joint NNSA/Navy Government Work Breakdown Structure (GWBS).
- Developed joint NNSA/Navy Phase 2/2A schedule and released several program plans.
- Coordinated information sharing with the UK and developed charters between the Navy, UK, and NNSA to enable working groups to advance the RW/Mk7 Program.

Stockpile Major Modernization
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Stockpile Major Modernization $2,897,163,000	**Stockpile Major Modernization $2,838,759,000**	**Stockpile Major Modernization -$58,404,000**
B61-12 LEP $672,019,000	*B61-12 LEP $27,500,000*	*B61-12 LEP -$644,519,000*
• Maintained Phase 6.6 component full-scale production. • Executed system level builds at Pantex Plant and B61-12 shipment schedules to DOD. • Executed aircraft compatibility testing with bombers and dual capable aircraft (U.S. and NATO), including the Air Force B-21.	• Maintain system level production at Pantex. • Achieve system Last Production Unit (LPU). • Execute steady state production for components and complete life of program demand. • Execute REST surveillance scope and aircraft compatibility testing for B-21.	• The decrease represents an alignment with B61-12 LEP plans for component delivery of LPU and system level LPU.
B61-13 LEP $0	*B61-13 LEP $16,000,000*	*B61-13 LEP +$16,000,000*
• N/A.	• Complete development engineering activities including releasing final design definitions. • Complete Canned Subassembly development builds.	• The increase represents program plan ramp up and start of development engineering activities.
W88 ALT 370 $162,057,000	*W88 ALT 370 $78,700,000*	*W88 ALT 370 -$83,357,000*
• Executed full-scale component and system level production. • Delivered all Navy commitments on schedule, including system and joint test assembly deliverables. • Met all REST surveillance requirements and supported Navy testing.	• Complete component and system-level production at steady-state rates. • Complete W88 ALT 370 system conversions (last production unit). • Continue coordinating closely with the Navy to ensure a fully integrated schedule of hardware needs and deliveries. • Execute REST surveillance scope.	• The decrease represents components completing production in FY 2023, several components scheduled to complete production in FY 2024, and all components and system completing production by the end of FY 2025.
W80-4 LEP $1,122,451,000	*W80-4 LEP $1,164,750,000*	*W80-4 LEP +$42,299,000*
• Closed out Phase 6.3 (Development Engineering). • Completed Preliminary Design Review and Acceptance Group (PDRAAG).	• Continue with Phase 6.4 Production Engineering activities for the W80-4 LEP in support of the Air Force LRSO program. • Continue Component Final Design Reviews.	• The increase represents a ramp-up of Phase 6.4 (Production Engineering) activities in alignment with the Airforce LRSO Program.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
• Completed System Pre-Production Engineering Gate (PPEG). • Began Phase 6.4 (Production Engineering) activities for the W80-4 in support of the Air Force LRSO Program.	• Conduct joint testing with AirForce Long Range Stand-Off (LRSO) Program.	
W80-4 ALT-SLCM $20,000,000	*W80-4 ALT-SLCM $0*	*W80-4 ALT-SLCM -$20,000,000*
• Coordinated activities with DoD to explore AF&F design that is system agnostic and could support a variety of delivery platforms.	• Funding not provided for this program in the FY 2025 budget.	• The decrease represents no funding for this program in the FY 2025 President's Budget Request.
W87-1 Modification Program $680,127,000	*W87-1 Modification Program $1,096,033,000*	*W87-1 Modification Program +$415,906,000*
• Matured program management and program controls. • Advanced design maturity and manufacturing readiness levels. • Conducted qualitative risk identification and impact analysis and mature quantitative risk analysis process. • Transitioned to oversight of the program with Earned Value Management. • Conducted joint testing with the Air Force Sentinel, formerly known as Global Based Strategic Deterrence (GBSD), and Mk21A program including preparations for the first W87-1 flight test with Sentinel. • Entered Phase 6.3, Development Engineering.	• Continue component baseline design reviews. • Conduct qualitative risk identification and impact analysis and mature quantitative risk analysis process. • Conduct joint testing with Air Force Sentinel (formerly Ground Based Strategic Deterrence) and Mk21A programs. • Continue Phase 6.3 and advance design maturity and manufacturing readiness levels, and progress component and sub-system designs in preparation for the system baseline design review. • Continue component development builds and testing.	• The increase represents further progress in development engineering including component development builds and testing to advance technology and manufacturing readiness levels and support system ground and flight tests.
W93 Program $240,509,000	*W93 Program $455,776,000*	*W93 Program +$215,267,000*
• Continued Phase 2 (Feasibility Study and Design Options) design and decision analysis to down-select the Nuclear Explosive Package (NEP), including Hydro test preparations and modeling/simulation activities.	• Complete Phase 2 activities to document and down-select major subsystem designs and components. • Transition down-selected advanced technologies into the W93 program of record. • Conduct hydro tests beginning in FY 2025.	• The increase represents the W93 FPU and LPU acceleration of activities, including prototype builds of the secondary and development builds for mechanisms and firing set, as well as additional design cycle activities.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
• Executed non-nuclear component (NNC) surety architecture analysis of alternatives. • Conducted customer requirements exchanges with the Navy and M&Os to begin requirements assignment to major components. • Delivered Federal Program Office documentation to M&Os, including Weapon Design and Cost Report Requirements Document, Project Controls Plan, Configuration Control Management Plan, Systems Engineering Plan, Requirements Management Plan, Customer Requirements Review Plan, and Risk Management Plan. • Issued a joint NNSA/Navy Government Work Breakdown Structure (GWBS) to serve as the basis of cost reporting prior to Weapon Design Cost Report (WDCR) in FY 1027. • Continued collaboration with the UK on parallel design and development of the Replacement Warhead, RW/Mk7.	• Release Design Definition Packages. • Complete Component Feasibility Gates. • Complete System Feasibility Gate. • Continue coordination with the Navy on the design and development of the Mk7 aeroshell. • Commence Phase 2A. • Execute joint NNSA/Navy flight test FCET-7 and NNSA Atrax supplemental flight tests. • Support the W93 Project Officers Group (POG) structure including subcommittees, working groups, and task teams. • Continue collaboration with the UK on parallel design and development of the Replacement Warhead, RW/Mk7.	

Stockpile Management
Stockpile Sustainment

Overview
The Stockpile Sustainment program directly executes maintenance, limited life component exchanges (LLCE), minor alterations, surveillance, assessment, surety studies and capability development, and management activities for all enduring weapons systems in the stockpile. The program includes the B61, W76, W78, W80, B83, W87, W88, and Multi-Weapon Systems (MWS). As required by 50 United States Code (USC) Section 2525, safety, security, and effectiveness assessments are performed to determine whether the systems can continue to be certified without the need for an underground nuclear test.

Current U.S. nuclear weapons and associated delivery systems

Warheads—Strategic Ballistic Missile Platforms					
Type [a]	***Description***	***Carrier***	***Laboratories***	***Mission***	***Military***
W78	Reentry vehicle warhead	Minuteman III Intercontinental Ballistic Missile	LANL/SNL	Surface to surface	Air Force
W87-0	Reentry vehicle warhead	Minuteman III Intercontinental Ballistic Missile	LLNL/SNL	Surface to surface	Air Force
W76-0/1/2	Reentry body warhead	Trident II D5 Strategic Weapon System (Submarine Launched Ballistic Missile)	LANL/SNL	Underwater to surface	Navy
W88	Reentry body warhead	Trident II D5 Strategic Weapon System (Submarine Launched Ballistic Missile)	LANL/SNL	Underwater to surface	Navy
Bombs—Aircraft Platforms					
Type [a]	***Description***	***Carrier***	***Laboratories***	***Mission***	***Military***
B61-3/4	Non-strategic bomb	F-15, F-16, certified NATO aircraft	LANL/SNL	Air to surface	Air Force/ Select NATO forces
B61-7	Strategic bomb	B-2 bomber	LANL/SNL	Air to surface	Air Force
B61-11	Strategic bomb	B-2 bomber	LANL/SNL	Air to surface	Air Force
B61-12	Non-strategic bomb Strategic bomb	F-15, F-35A, certified NATO aircraft, B-2 bomber	LANL/SNL	Air to surface	Air Force/ Select NATO forces
B83-1	Strategic bomb	B-2 bomber	LLNL/SNL	Air to surface	Air Force
Warheads—Cruise Missile Platforms					
Type [a]	***Description***	***Carrier***	***Laboratories***	***Mission***	***Military***
W80-1	Air-launched cruise missile strategic	B-52 bomber	LLNL/SNL	Air to surface	Air Force

LANL = Los Alamos National Laboratory
LLNL = Lawrence Livermore National Laboratory
NATO = North Atlantic Treaty Organization
SNL = Sandia National Laboratories

[a] The suffix associated with each warhead or bomb type (*e.g.*, "-0/1" for the W76) represents the multiple modifications associated with the respective weapon.

Description

B61 Stockpile Systems

The B61 gravity bombs are the oldest weapons in the enduring stockpile and are deployed by the Air Force on various aircraft. The B61 family includes five modifications with two distinct categories. The strategic category includes the B61 Modifications -7 and -11. The non-strategic category includes the B61 Modifications -3 and -4, supporting the Nation's extended nuclear commitment. This program directly executes weapon maintenance, limited life component exchanges, minor alterations, surveillance, assessment, capability development and management activities for the B61 gravity bombs.

W76 Stockpile Systems

The W76-0/1/2 are the warheads integrated into the Trident II D5 Strategic Weapon System. It is part of the Submarine-Launched Ballistic Missile (SLBM) force. The W76-0/Mk4, W76-1/Mk4A, and W76-2/Mk4A are completed by NNSA as a Reentry Body Assembly and delivered to DOD. This program directly executes weapon maintenance, limited life component exchanges, minor alterations, surveillance, assessment, capability development and management activities for the W76 warheads.

W78 Stockpile Systems

The W78/ Mk12A re-entry vehicle is deployed on the Minuteman III Intercontinental Ballistic Missile (ICBM). This program directly executes weapon maintenance, limited life component exchanges, minor alterations, surveillance, assessment, capability development and management activities for the W78 warheads.

W80 Stockpile Systems

The W80 warhead is used in the Air Launched Cruise Missile (ALCM) deployed by the Air Force. This program directly executes weapon maintenance, limited life component exchanges, minor alterations, surveillance, assessment, capability development and management activities for the W80 warheads.

B83 Stockpile Systems

The B83 is an aircraft-delivered, strategic gravity bomb deployed by the Air Force. This program directly executes weapon maintenance, limited life component exchanges, minor alterations, surveillance, assessment, capability development and management activities until all B83 gravity bombs are retired and dismantled, pursuant to the FY 2023 Nuclear Weapons Stockpile Plan.

W87-0 Stockpile Systems

The W87-0/Mk21 re-entry vehicle is deployed on the Minuteman III ICBM and will be the first warhead deployed on Sentinel. This program directly executes weapon maintenance, limited life component exchanges, minor alterations, surveillance, assessment, capability development and management activities for the W87-0 warheads. It also supports development and qualification activities for Sentinel integration.

W88 Stockpile Systems

The W88 is integrated into the Trident II D5 Strategic Weapon System. It is part of the Submarine-Launched Ballistic Missile (SLBM) force. The W88/Mk5 is completed by NNSA as a Re-entry Body Assembly and delivered to DOD. This program directly executes weapon maintenance, limited life component exchanges, minor alterations, surveillance, assessment, capability development and management activities for the W88 warheads.

Multi-Weapon Systems

Multi-Weapon Systems (MWS) is a multi-weapon, multi-site product-based program that enhances the integration and efficiency of the NNSA's nuclear security enterprise (NSE). The activities within MWS are cross-cutting among sites and/or weapons or cannot be funded by specific weapons programs due to classification restrictions. This program provides multi-weapon products to the NNSA NSE supporting surveillance, reliability, maintenance, product realization, digital engineering,

weapons response, nuclear explosive safety, military liaison, integrated surety architecture, and use control for both the current and modernized stockpile.

Major activities within each area

(1) **Weapon Maintenance:** Includes production of limited-life components (LLCs) including gas transfer systems (GTS), neutron generators (NG), and other designated limited-life components as required by guidance and directive schedules, day-to-day stockpile maintenance and repair activities, production, and delivery of components for each weapon type, refurbishment, and replacement of aging components to sustain stockpile life and rebuilds.

(2) **Weapon Surveillance:** Includes Joint Test Assembly (JTA) flight test vehicle and ground testbed builds, new material laboratory and flight tests, retrofit evaluation system laboratory and flight tests, stockpile laboratory tests, stockpile flight tests, quality evaluations, special testing, and component and material evaluation to support assessment of the safety, security, and effectiveness of the nuclear weapons stockpile. Data from these tests contributes to the Annual Assessment Reports and the Report on Stockpile Assessments to the President.

(3) **Weapon Assessment:** Includes activities associated with management of fielded weapon systems. Provides systems and component engineering support, support to planning, resolution, and documentation of significant finding investigations (SFIs) to include assessment of root cause, extent of condition, and impact to system effectiveness or safety. Also includes activities associated with planning, developing, and updating the technical basis for the materials, components, and weapons and performing the weapon assessments. Finally, this includes activities associated with preparation, writing, and coordination of Annual Assessment Reports (AARs) and Weapon Reliability Reports (WRRs), as well as activities needed to assess/resolve system-specific weapon response issues and to provide support to the Nuclear Explosive Safety Study Groups (NESSGs) and the Nuclear Weapon System Surety Groups (NWSSGs) as required. Within MWS, activities in this area include use control studies and assessment, as well as surety capability design, development, qualification, production, and integration for the legacy and modern stockpile.

(4) **Development Studies/Capability Improvements:** Includes activities associated with improvements in surveillance capabilities, technical basis improvements, weapon specific technology maturation for insertion or replacement, JTA development/refresh, and system/surety studies.

(5) **Weapon Program Planning/Support:** Includes activities associated with management of fielded weapon systems. Provides systems and component engineering support for planning, issue resolution, and documentation. Within MWS, includes those activities needed to operate, maintain, and develop products, tools, and applications supporting enterprise product realization through an integrated digital environment and activities associated with external production liaison missions, weapon response, nuclear explosive safety, and technical basis.

Highlights of the FY 2025 Budget Request

Stockpile Systems

- Complete development, qualification, production, and delivery of all scheduled LLCs for the enduring systems. LLCs include gas transfer systems (GTS), neutron generators (NG), and alteration kits delivered to sustain the nuclear weapons stockpile.
- Conduct surveillance program activities for all weapon systems using data collection from flight tests, laboratory tests, and component evaluations to assess stockpile reliability, performance, and safety.
- Conduct Annual Assessment activities for all weapon systems including the in-depth testing and analysis of systems, subsystems, and components.
- Analyze, evaluate, and close high priority Significant Finding Investigations (SFI) in accordance with the currently approved plans.
- Continue legacy component builds on legacy equipment for life of program needs.

B61

- Continued increase in activities supporting the B61-12 transition to stockpile sustainment.
- Continue procurements and production of B61-12 GTS second cycle and JTA components for transition activities.
- Increase in surveillance activities for B61 portfolio (component testing/D&Is/Flight testing/Pit surveillance/CSA).
- Continue B61 PBX 9502 qualification activities.
- Continue production of B61 Multi-Application Transportation Attachment Devise (MTAD) ISA components.
- Continue process of fielding ISA MTAD capability for the B61-12.

W76

- Produce GTS for W76-1/-2 for stockpile sustainment.
- Conduct full-scale development for the new W76-1 Joint Test Assembly-3 (JTA3) flight test body, an engineering refresh of the existing W76-1 JTA1.
- Continue development and qualification activities and start production readiness for ALT 939 Integrated Surety Architecture (ISA) implementation on the W76 family of warheads.
- Begin Phase 6.5 of the W76-1/2 Mk4B development and qualification program.
- Complete W76/Mk4B Design Review-2 (combined Product Definition Documentation Review and Final Design Review).
- Continue integration analysis and qualification with the Navy for D5LE2 compatibility assessment for W76-1/2.
- Prepare for and conduct D5LE2 Systems Requirements Review.

W78

- Conduct W78 repair activities.
- Conduct lifetime sustainment studies for the W78 program.

W80

- Execute ALT 369 surveillance production activities for the W80-1 program.
- Continue W80-1 high explosive testing. Complete abnormal heating safety test design and test build process.
- Continue W80-1 Disassembly for W80-4 harvesting.

B83

- Implement electrostatic discharge quantitative analysis for B83 weapon response.
- Continue B83 safety surveillance activities.

W87

- Continue integration of W87-0 with the Air Force's Sentinel replacement for the Minuteman III (MMIII) and the Mk21 Fuze.
- Produce W87-0 ground test hardware and Joint Environmental Test Units to support first and follow-on flight tests of the Sentinel missile.
- Support Air Force execution of MMIII to Sentinel transition for W87-0.
- Execute W87-0 NG retrofit, repairs and rebuild activities.
- Develop and produce WR and JTA hardware, including firing set assemblies (FSA) and Canned Subassembly Simulator (CSASim) for the W87-0.
- Execute FPU of the -108 Firing Set Assembly for the W87-0.

W88

- Produce GTS and NG for W88 ALT 370 to support stockpile sustainment.
- Conduct installation of the Safeguard Transporter (SGT) Capability Retrofit (SCR) as the ISA application for transportation SGT solutions.
- Complete 1E38 Detonator Lot 3811 for the W88.
- Prepare for and conduct D5LE2 Systems Requirements Review.
- Conduct non-destructive evaluations of CSAs and begin readiness activities for CSA Conversion.

MWS

- Execute ISA logistics hub operations for DOE/NNSA transportation in accordance with ISA requirements and schedules.
- Conduct stockpile sustainment activities providing products, components, and/or services to execute multi-weapon surveillance, weapons reliability reporting to DOD, weapon logistics and accountability, special materials, and stockpile planning.
- Develop and deploy new product realization tools and applications to support stockpile sustainment and modernization activities within a digital engineering and model-based system engineering integrated environment.
- Support cybersecurity requirements for digital engineering tools and applications.

- Provide multi-system weapon response, nuclear explosive safety, and external production resources ensuring safe nuclear explosive operations.
- Continue implementation of multi-system ISA requirements across the stockpile, specifically with progress toward various IOC dates for Enhanced Capability Shipping Configurations (ECSE).
- Conduct multi-system use control system studies and assessments.
- Design, develop, qualify, and produce surety capabilities aligned with weapon schedules and enduring stockpile refresh opportunities.
- Complete engineering support to bring a third centrifuge at the Weapons Evaluation Test Laboratory (WETL) Pantex online.
- Provide engineering support for Tonopah Test Range (Nevada) radar recapitalization.

FY 2026 – FY 2029 Key Milestones
Stockpile Systems

- Complete development, qualification, production, and delivery of all scheduled Limited Life Components (LLC) for the enduring systems. LLCs include gas transfer systems (GTS), neutron generators (NG), and alteration kits delivered to sustain the nuclear weapons stockpile.
- Conduct surveillance program activities for all weapon systems using data collection from flight tests, laboratory tests, and component evaluations to assess stockpile reliability, performance, and safety.
- Conduct Annual Assessment activities for all weapon systems including the in-depth testing and analysis of systems, subsystems, and components.
- Analyze, evaluate, and close high priority Significant Finding Investigations (SFI) in accordance with the currently approved plans.
- Complete legacy component builds on legacy equipment for life of program needs.

B61

- Integrate the B61-12 into stockpile sustainment to include LLC production, surveillance, and annual assessment activities.
- Begin full rate production of B61-12 GTS second cycle and JTA components.
- Begin production of high explosive (PBX 9502) components to support B61-12 rebuilds.
- Continued technical basis activities for B61-12.
- Execute B61-12 sub-crit explosive testing.
- Execute B-21 aircraft nuclear compatibility certifications activities for the B61.
- Continue efforts for B61 ISA/MTAD 5-year touchpoint refresh activities.
- Implement surety sustainment for the B61-12 weapon system.

W76

- Achieve W76/Mk4B FPU (FY 2026).
- Receive W76/Mk4BPhase 6.6 authorization (FY 2026).
- Achieve W76 ALT 939 FPU (FY 2027).
- Complete the W76-1 JTA3 Baseline Design Review.
- Complete W76 ALT 939 Final Design Review.
- Execute W76 JTA3 Final Design Review.
- Continued D5LE2 platform compatibility planning with the Navy and begin flight and ground testing in FY 2029.

W78

- Complete W78 NG Production (FY 2028).
- Continue W78 repairs.

W80

- Restart ISA/ECSC development activities for the W80-1 (FY 2026).
- Complete production of ISA/MTAD Subsystem components (FY2027).

- Continue W80-1 disassembly activities for W80-4 harvesting.
- Begin W80-4 transition to stockpile planning and activities.
- Execute ALT 369 surveillance replacement builds for the W80-1 annually.

W87
- Continue Sentinel integration and qualification activities including production of ground and flight test articles to support Sentinel.
- Continue development and production WR and JTA hardware, including firing set assemblies (FSA) and Canned Subassembly Simulator (CSASim) for the W87-0.

B83
- Continue B83 safety surveillance activities (D&Is, HE, component testing, cable production).

W88
- Continue D5LE2 platform compatibility planning with the Navy and begin flight and ground testing in FY 2029.
- Conduct material characterization, complete product definition, and process and production readiness for W88 CSA Conversion.
- Continue W88 component builds to support lifetime provisioning.

MWS
- Complete SCR conversions (FY 2026).
- Deliver MWS use control systems studies and capabilities.
- Deliver MWS Weapon Reliability Report to DOD annually.
- Deliver MWS digital capabilities that improve the product realization processes across the nuclear security enterprise.
- Complete MWS engineering support for Tonopah Test Range radar recapitalization.

FY 2023 Accomplishments
Stockpile Systems
- Delivered all scheduled LLCs for the enduring systems.
- Conducted surveillance activities for all weapon systems using data collection from flight tests, laboratory tests, and component evaluations to assess stockpile reliability without nuclear testing which culminated in completion of all Annual Assessment Reports and generation of Laboratory Director Letters to the President.

B61
- Modified multiple B61-7 JTA Flight Recorders to support B61-11 JTA LOP activities.
- Completed one-time B61-11 Type 6D JTA maintenance activity at SNL.
- Completed multiple B61 DisLEP weapon disassembly's to harvest components for reuse.
- Performed a full-scale function test on a B61 pit.
- Performed a B61-11 post-penetration hydro test to inform technical basis data.
- Completed FPU for B61-12 ISA/MTAD.

W76
- Continued development for the W76 JTA 3 (JTA1 refresh).
- Implemented tailored analysis of alternatives study to replace H1333B shipping container for W76 warheads with H1514D container.
- Received Phase 6.4 Authorization for W76-1/2 Mk4B.

W78
- Conducted W78 repairs.
- Discontinued development of the W78 JTA6R (JTA6 Refresh) and began ramp down work.
- Completed production of detonator cable assembly (DCA) lot to support surveillance activities.

W80

- Completed W80-1 ALT 369 deliveries to the Air Force.
- Executed three W80-1 ALCM JTA8 flight tests.
- Completed SLIP (System Level ISA Performance Test) in support of weapon assessment.
- Completed first W80-1 disassembly in support of W80-4 component harvesting.
- Delivered H1388 shipping containers to the Air Force.
- Completed W80-1 Operational Safety Review (OSR) at Pantex.

B83

- Completed B83 WETL Safety Laboratory Test.
- Completed B83 Joint Command Disable Flight Test (JCD 385).
- Completed B83 Implosion Timing Test (ITT) at Pantex.

W87

- Conducted W87-0 integration activities to support MK21 replacement fuse and Sentinel including JETU, JTA4a, and JTA4b flight test vehicle development.
- Conducted W87-0 repairs and rebuilds.
- Continued -107 FSA production for the W87-0.
- Continued -108 FSA development including successful completion of the final design review for the W87-0.
- Completed final design review for CSA Sim for the W87-0.
- Completed FTU4 build at Pantex supporting MK21 Mod Fuze FPU.
- Continued development and production of W87-0 WR and joint test assembly hardware.

W88

- Completed development of W88 ALT 940 ISA transportation surety solution.
- Met FPU for W88 ALT 940 system.
- Delivered W88 H1514C containers to the DOE/NNSA and DOD.

MWS

- Delivered the Weapon Reliability Report to the DOD.
- Completed required WETL test requirements.
- Delivered Code Management System (CMS) Controllers, Field Testers, and support equipment to DOD.
- Completed multi-system use control system studies and assessments.
- Delivered surety capabilities aligned with weapon schedules and enduring stockpile refresh opportunities.
- Deployed product realization tools and applications to support stockpile sustainment and modernization activities.

Stockpile Sustainment
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Stockpile Sustainment $1,321,139,000	**Stockpile Sustainment $1,356,260,000**	**Stockpile Sustainment +$35,121,000**
Overall: • Executed weapon maintenance, limited life component exchanges, minor alterations, surveillance, assessment, capability development and management activities. • Produced and conducted LLCE operations. • Conducted surveillance activities, including D&I, system-level laboratory tests, joint flight tests, component and material evaluations, and assessment. • Conducted weapon assessment activities necessary to complete WRRs and AARs, to include analyses of laboratory testing and SFIs, as required. • Implemented integrated surety architecture (ISA) capabilities and conduct multi-system implementation studies. • Developed, qualified, and produced weapon surety capabilities. • Executed activities associated with management of fielded weapon systems. • Provided systems and component engineering support for planning, resolution, and documentation.	Overall: • Execute weapon maintenance, limited life component exchanges, minor alterations, surveillance, assessment, capability development and management activities. • Produce and conduct LLCE operations. • Conduct surveillance activities, including D&I, system-level laboratory tests, joint flight tests, component and material evaluations, and assessment. • Conduct weapon assessment activities necessary to complete WRRs and AARs, to include analyses of laboratory testing and SFIs, as required. • Implement integrated surety architecture (ISA) capabilities and conduct multi-system implementation studies. • Develop, qualify, and produce weapon surety capabilities. • Execute activities associated with management of fielded weapon systems. • Provide systems and component engineering support for planning, resolution, and documentation.	Overall: • The increase represents a ramp-up in planned activities as the B61 Program Office has effectively planned and positioned its portfolio and FYSNP to accept and execute the increase required scope associated with the B61-12 transition to Stockpile Sustainment; the ramp-up in production readiness activities for the W76-1/2 Mk4B in support of FPU in FY 2026 and ALT 939 Integrated Surety Architecture; and in MWS, the ramp-up for the PRIDE enterprise software development and deployment effort, surveillance activities to support major modernization activities transitioning to stockpile sustainment, and ISA activities.
B61 Stockpile Systems $130,664,000	*B61 Stockpile Systems $159,276,000*	*B61 Stockpile Systems +$28,612,000*
• Began sustainment activities of B61-12 to include system management, annual assessment, joint test assembly (JTA) development and procurement, canned sub-	• Continue execution of additional scope supporting the B61-12 transition to stockpile sustainment.	• The increase represents a ramp-up planned in all major activity levels (MAL) (weapon surveillance, maintenance, assessment, program management, Dev Studies) as the B61 Program

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
assembly (CSA) retrofit evaluation system test (REST) surveillance, and technical basis development. • Executed and analyzed a B61-11 cable pull down and hydrodynamic test to support weapon assessment. • Executed high explosive qualification and development activities to support B61-12 rebuild schedules. • Completed qualification activities to support ISA requirements.	• Continue procurements and production of B61-12 GTS second cycle and JTA components. • Conduct surveillance activities including component testing (Firing set, Nose Bomb Subassembly, System cables/LACs/Detonator surveillance activities for B61-11/ REST CSA testing/DCAs/Valves/Pit Surveillance/Shelf-Life Testing)/D&Is/Flight Tests/Aircraft compatibility/CSAs. • Conduct additional weapon assessment activities supporting the B61-12 including prep work Sub-Crit testing, SFIs, and increased tech basis requirements (B61-12 Hydro, Material studies, aging, and lifetime studies). • Continue B61 PBX 9502 qualification activities. • Continue full program execution by increasing program management at M&O sites required to adequately support the B61-12 requirements within Stockpile Sustainment. • Maintain ISA capability for the B61-12. • Produce Multi-Application Transportation Attachment Devise (MTAD) components. • Continue the B61 ISA/MTAD 5-year touchpoint refresh activities.	Office has effectively planned and positioned its portfolio and FYSNP to accept and execute the increase required scope associated with the B61-12 transition to Stockpile Sustainment.
W76 Stockpile Systems $190,577,000	*W76 Stockpile Systems $232,378,000*	*W76 Stockpile Systems +$41,801,000*
• Conducted joint development and qualification activities with the Navy on the Mk4B for the W76-1 and W76-2 systems. Development and qualification activities includes warhead level ground testing and analysis, component qualification testing and analysis, execution of Phase 6.3 reviews, and planning for authorization of Mk4B nuclear explosive operations at Pantex for warhead conversion	• Continue joint development and qualification activities with the Navy on the Mk4B for the W76-1 and W76-2 systems. Development and qualification activities includes warhead level ground testing and analysis, component qualification testing and analysis, execution of Phase 6.4 reviews, and planning for authorization of Mk4B nuclear explosive operations at Pantex for warhead conversion	• The Increase represents a ramp-up in production readiness activities for the W76-1/2 Mk4B in support of FPU in FY 2026 and ALT 939 Integrated Surety Architecture. This includes an increase in material purchases and the start of component production in support of FY 2027 ALT 939 system FPU. Additionally, the program will prepare for and conduct D5LE2 Systems Requirements Review.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
from Mk4A to Mk4B configuration for warhead FPU and quantity production. • Continued full program execution for development and qualification of W76-1 JTA3 to ensure on time FPU prior to JTA1 end of life. • Continued W76-1/2 ALT 939 ISA development and pre-production activities to support ISA implementation on the W76-1 and W76-2 systems.	from Mk4A to Mk4B configuration for warhead FPU and quantity production. • Increase W76-1/2 Mk4B production readiness activities and component hardware purchases in support of FPU in FY 2026. • Continue full program execution for development and qualification of W76-1 JTA3 to ensure on time FPU prior to JTA1 end of life. • Continue W76-1/2 ALT 939 ISA development and pre-production activities to include purchasing component hardware and production readiness to support production ramp-up for FY 2027 FPU. • Prepare for and conduct D5LE2 Systems Requirements Review.	
W78 Stockpile Systems $140,209,000	• *W78 Stockpile Systems $90,390,000*	*W78 Stockpile Systems -$49,819,000*
• Conducted JTA6R technology development including qualification testing and component production. • Conducted W78 repair activities. • Completed detonator lot production. • Support Air Force execution of MMIII to Sentinel transition. • Conducted GTS and NG production to support LLCE deliveries.	• Conduct W78 repair activities. • Continue to support Air Force execution of MMIII to Sentinel transition. • Conduct GTS and NG production to support LLCE deliveries. • Conduct lifetime sustainment studies for the W78 program.	• The decrease represents cancellation of the JTA6R development project from the W78 program.
W80 Stockpile Systems $98,318,000	*W80 Stockpile Systems $76,767,000*	*W80 Stockpile Systems $-21,551,000*
• Conducted and deliver W80-1 ALT 369 surveillance replacement builds to the Air Force. • Completed re-qualification activities for JTA3 builds. • Executed additional JTA8 build to support flight test backup.	• Perform W80 ALT 369 surveillance replacement builds. • Execute JTA8 build to support weapon surveillance. • Execute JTA8 flight tests. • Continue disassembly of W80-1 to support W80-4 harvesting.	• The decrease represents a reduction in ISA component production requirements and ISA/Enhanced Capability Shipping Configuration (ECSC) requirements will not be executed in FY 2025. This work will restart in FY 2026. JTA3 build requalification activities will not occur in FY

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
• Continued W80-1 disassembly preparation activities for W80-4 harvesting. • Completed first W80-1 disassembly in support of W80-4 harvesting. • Continued high explosive and hydrodynamic testing activities to support weapon surveillance and assessment. • Began procurements to support abnormal heating safety test. • Completed qualification activities to support ISA requirements. • Completed SLIP Test to support weapon assessment. • Continued GTS production to support LLCE deliveries. • Delivered H1388 shipping containers to the Air Force. Completed W80-1 Operational Safety Review (OSR) at PX.	• Continue W80-1 high explosive testing. • Execute production of GTS and NGs to meet PCD demands. • Continue hydrodynamic testing to support weapon assessment. • Continue production of components to meet ISA requirements. • Complete abnormal heating safety test design and build process. • Continue procurement, manufacturing, and reacceptance of hardware for life of program.	2025 also contributing to the decrease in funding.
B83 Stockpile Systems $58,930,00	*B83 Stockpile Systems $17,164,000*	*B83 Stockpile Systems -$41,766,000*
• Conducted surveillance activities, including disassembly and inspections (D&Is), system-level laboratory tests, joint flight tests, CMEs, and assessment. • Completed the abnormal thermal safety test. • Executed electrostatic discharge quantitative analysis to support weapon response and safe handling operations.	• Implement electrostatic discharge quantitative analysis for B83 weapons response. • Continue B83 safety surveillance activities.	• The decrease represents updated program requirements based on guidance from the 2022 Nuclear Posture Review and Section 1636 of the FY 2024 NDAA.
W87 Stockpile Systems $124,541,000	*W87 Stockpile Systems $123,057,000*	*W87 Stockpile Systems -$1,484,000*
• Conducted GTS production to support LLCE deliveries and hedge. • Executed W87-0 NG retrofit repairs and rebuild activities.	• Continue GTS production to support LLCE deliveries. • Continue execution for W87-0 NG retrofit, repairs, and rebuild activities.	• The decrease represents ALT360 GTS production activities that support stockpile and hedge requirements being complete.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
• Conducted -108 firing set development and -107 firing set production activities for out-year stockpile rebuilds. • Supported Sentinel qualification activities with the DOD including test planning, flight test vehicles development, and supporting stockpile hardware planning. • Supported integration activities associated with Mk21 fuze. • Produced WR and joint test assembly components including Canned Subassembly (CSASim) Simulator.	• Execute -108 firing set FPU and firing set production activities for out-year stockpile rebuilds. • Continue to support Sentinel qualification activities with the DOD including test planning, flight test vehicles development, and supporting stockpile hardware planning. • Continue to support integration activities associated with Mk21 fuze. • Continue to produce WR and joint test assembly components including Canned Subassembly Simulator (CSASim).	
W88 Stockpile Systems $139,934,000	*W88 Stockpile Systems $130,669,000*	*W88 Stockpile Systems -$9,265,000*
• Produced ALT 940 ISA system and associated components. • Complete system level qualification activities for SCR ISA transportation and continue production activities.	• Continue W88 detonator production. • Continue W88 component builds to support lifetime provisioning. • Prepare for and conduct D5LE2 Systems Requirements Review.	• The decrease represents W88 ALT 940 Integrated Surety Architectures production completion and fielding and the transfer of the ISA Safeguards Transporter (SGT) Capability Retrofit (SCR) to the MWS program line.
Multi-Weapon Systems $437,966,000	*Multi-Weapon Systems $526,559,000*	*Multi-Weapon Systems +$88,593,000*
• Conducted Use Control training and capability integration with DOD customers. • Executed Use Control capability development, equipment procurements and studies supporting LEP FPUs, the enduring stockpile, and external deliverables. • Operated and maintained the ISA logistics hub as a cross-cutting function across all ISA enabled systems. • Procured and managed special material inventories supporting LLCs. • Supported cybersecurity requirements for digital engineering tools and applications.	• Continue Use Control training and capability integration with DOD customers. • Continue driving the Use Control capability development, equipment procurements and studies supporting LEP FPUs, the enduring stockpile, and external deliverables. • Continue to operate and maintain the ISA logistics hub as a cross-cutting function across all ISA enabled systems. • Procure and manage special material inventories supporting LLCs. • Continue support of cybersecurity requirements for digital engineering tools and applications.	• The increase represents: PRIDE's enterprise software development and deployment effort will expand in alignment with W87-1 and W93 acquisition activities. Deploying modern digital engineering systems early in weapon modernization efforts maximizes return on investment and reduces weapon system acquisition risk; an increase to support to Multi-Weapon ISA base capability, including multi-weapon surveillance and sustainment activities, multi-weapon component recapitalization, and over-the-road vehicle compatibility upgrades including the transfer of the ISA activities from the W88 Stockpile System; MWS surveillance

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
• Coordinated and managed LLC delivery and schedules with DOD. • Delivered the Weapon Reliability Report (WRR) to DOD annually. • Responded to DOD Unsatisfactory Reports (URs) in response to potential issues with the stockpile. • Provided DOD training on weapons maintenance activities in the field. • Operated and maintained Product Realization Integrated Digital Enterprise (PRIDE) systems and developed and deployed new product realization tools and applications. • Maintained storage capacity and provide safe, secure, and compliant storage of Special Nuclear Material (SNM) at the Pantex Plant, and conduct required SNM surveillance activities supporting the stockpile assessment. Conducted multi-weapon surveillance activities and tester development.	• Coordinate and manage LLC delivery and schedules with DOD. • Continue to deliver the WRR to DOD annually. • Continue to respond to DOD URs in response to potential issues with the stockpile. • Continue providing DOD training on weapons maintenance activities in the field. • Continue to operate and maintain PRIDE systems to include design, product as-built, surveillance, and dismantlement information in support of the Stockpile Management mission from design through dismantlement. • Continue maintaining storage capacity and provide safe, secure, and compliant storage of SNM at the Pantex Plant, and conduct required SNM surveillance activities supporting the stockpile assessment. • Execute complex-wide studies and multi-weapon activities that analyze the comprehensive security risk and consequence analysis of nuclear weapon systems against specific threats. • Continue designing, developing, producing, and maintaining multi-weapon handling and test gear supporting weapon logistics. • Continue conducting multi-system weapon response and conduct nuclear explosive safety studies for un-interrupted operations at the Pantex Plant. • Execute MWS surveillance activities that will increase support major modernization activities transitioning to stockpile sustainment. • Qualify commercial-off-the-shelf electronic components for relevant nuclear weapon	activities increase to support major modernization activities transitioning to stockpile sustainment; Qualification of commercial-off-the-shelf electronic components for relevant nuclear weapon environments to support nuclear modernization activities; and Production and maintenance of test and handling gear, spare parts for DOD, and containers.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
	environments to support nuclear modernization activities. • Perform production and maintenance of test and handling gear, spare parts for DOD, and containers.	

Stockpile Management
Weapons Dismantlement and Disposition

Overview

The Weapons Dismantlement and Disposition (WDD) program provides weapon dismantlements, safety studies on retired systems, material characterization, legacy component disposition, and the disposal of retired weapon parts. It includes activities for technical analysis needed to dismantle and safely store weapons being removed from the stockpile.

Stockpile Management
Weapons Dismantlement and Disposition

Description

Weapons Dismantlement and Disposition (WDD) is a critical element of NNSA's integrated effort to transform the enterprise and the stockpile. Specific activities include weapons disassembly, recycling of material and hardware for LEPs, disposition of retired warhead system components, and ensuring components are available for safety testing. Other supporting activities specific to retired warheads include conducting hazard assessments, issuing safety analysis reports, conducting laboratory and production plant safety studies, and declassification and sanitization of component parts. WDD relies on several enabling programs to complete its mission, such as the Office of Stockpile Production Integration for shipping, receiving, and equipment maintenance; Infrastructure for infrastructure sustainment; Environment, Safety, and Health for containers; and the Office of Secure Transportation for the movement of weapons and weapon components. WDD focuses on the safe and secure dismantlement of excess nuclear weapons and components. The WDD program has four major activities:

(1) Disassembly – WDD enables the dismantlement of weapons and canned subassemblies and is a significant supplier of material for future nuclear weapons production and Naval Reactors.

(2) Component Disposition – WDD ensures waste streams are identified to allow for the permanent disposition of weapon components.

(3) Retired Systems Management – WDD enables safety studies that ensure weapons in the stockpile awaiting dismantlement remain safe while in DOD custody.

(4) Component Characterization – WDD ensures that all potential hazards contained in weapon components are characterized to allow the weapons complex to safely work with individual weapon components.

Highlights of the FY 2025 Budget Request

- Execute a weapon dismantlement program consistent with the priorities of the LEPs, stockpile, and Naval Reactors.
- Execute annual activities as stated in the Production and Planning Directive.
- Provide enriched uranium, lithium, and components to the LEPs and external customers.
- Perform legacy component disposition activities.

FY 2026 – FY 2029 Key Milestones

- Conduct dismantlement activities consistent with the annual Nuclear Weapons Stockpile Memorandum.
- Reduce the size of legacy disposition inventories at each site.
- Eliminate excess power supplies from Pantex inventories.
- Develop processes and procure equipment to support dismantlement of special CSAs.

FY 2023 Accomplishments

- Met stockpile and naval reactor requirements through prioritized weapon and component dismantlement schedules.
- Maintained focus on the Pantex FY 2022 dismantlement program of record.
- Dispositioned weapon program components, keeping legacy piles from growing.
- Managed dismantlement system safety concerns on time.
- Conducted component characterization of hazards on time with no impact to worker safety.

Weapons Dismantlement and Disposition
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Weapons Dismantlement and Disposition (WDD) $56,000,000	**Weapons Dismantlement and Disposition (WDD) $54,100,000**	**Weapons Dismantlement and Disposition (WDD) -$1,900,000**
• Continued safe and secure dismantlement of nuclear weapons and components above national security requirements. • Recycled material and components from dismantled units required for LEPs, the stockpile, and other customers. • Continued effort at minimal levels to decrease Legacy component inventories to make space available for incoming LEP material.	• Continue safe and secure dismantlement of nuclear weapons and components. • Recycle material and components from dismantled units required for LEPs, the stockpile, and other customers. • Continue level of effort to decrease Legacy component inventories to make space available for incoming LEP material.	• The decrease represents reduced levels for Legacy component disposition and characterization.

Stockpile Management
Production Operations

Overview
Productions Operations is a multi-weapon system manufacturing-based program that drives individual site production capabilities and capacity for the stockpile sustainment and modernization programs, including limited life component production and weapon assembly and disassembly operations. Production Operations scope covers sustainment of labor required for weapon systems capabilities that enable individual weapon production and are not specific to one material stream. Production Operations also provides production equipment maintenance and calibration services for manufacturing operations to meet DOD War Reserve requirements. Facility major modernization and construction activities are not part of this budget subprogram and are covered in other parts of the Weapons Activities account.

Production Operations:
Provides the base manufacturing workforce capabilities (e.g., engineering, manufacturing, quality assurance) and capacity for Major Modernization and enduring stockpile production, weapon assembly, weapon disassembly required to meet NNSA schedules and meet DOD delivery schedules.

Supports the development, qualification, and production of Neutron Generator Assemblies (NGA) shippable items and shelf-life units; in addition, manufactures detonators and detonator cable assemblies.

Expands engineering and quality assurance processes responsive to increased non-nuclear component production requirements.

The New Brunswick Laboratory (NBL) program office supports the nation's national security, international safeguards, and nonproliferation programs by producing nuclear reference materials (RMs) and conducting proficiency testing exercises. NBL provides uranium, plutonium, and thorium materials to calibrate measurement equipment for quality control, method development, and a variety of research areas.

Stockpile Management
Production Operations

Description
Production Operations provides a multifaceted, skilled labor force, focusing on engineering and manufacturing labor, quality assurance, and programmatic equipment maintenance support for the manufacturing base that enables the individual site capability and capacity to sustain NNSA's production mission. Production Operations also refreshes and replaces production capabilities and supports programmatic equipment maintenance to improve efficiency and ensure manufacturing operations meet future DOD requirements. Production Operations requires close coordination with several NNSA Offices to ensure the correct capabilities are in place on time to support stockpile demands.

Production Operations major activities include the following:
- **Engineering & Integration** – Activities associated with the Process and Documentation for the development and production of components.
- **Supplier, Shipping, and Material Management** – Activities associated with the support for vendors, packaging, shipping, transportation, and site logistics and storage.
- **Production Equipment Maintenance** – Activities associated with general, corrective, and preventative maintenance of programmatic equipment.
- **Manufacturing Capability Sustainment** – Activities that enable the design, development, and production of components.
- **Equipment and Material Procurement** – Activities associated with the purchasing of equipment & material, and SNM Accountability and Control.
- **Program Management** – Activities required to support, manage, control, and report on overall program.
- **Modeling & Analysis** – Activities associated with site commodity/capacity analysis to support Defense Programs demand excursions and/or course of actions.
- **New Brunswick Laboratory** – Activities that support the storage, packing, shipping, and routine maintenance of Certified Reference Materials.

Highlights of the FY 2025 Budget Request
- Continue support for the Neutron Generator Enterprise, Detonator Production, Kansas City Short-Term Expansion Project (KCSTEP), Power Sources & Energetics, and the non-nuclear component focused Mark Quality Manufacturing Center (MQMC) activities.
- Procure critical replacement of spare parts and components for production equipment maintenance to ensure mission deliverables are met for the Sustainment, WDD, and Major Modernization programs.
- Continue hiring critical skilled labor resources to support increase in production activities and address attrition and/or single-point resources across the enterprise.
- Commence equipment maintenance work on 9204-2E Breathing Air System Upgrades.

FY 2026 – FY 2029 Key Milestones
- Continue support of production equipment maintenance.
- Support detonator production at LANL for 3-4 LEPs, W88 Stockpile System, W78 JTA, and ALT activities for multi-weapons.
- Maintain critical Neutron Generator Enterprise to ensure production for an average of ~950 units per year.
- Increase critical skilled labor and address attrition to maintain Stockpile Major Modernization scope and schedules in FY 2026.
- Complete final unit testing / qualification for Mass Spec in FY 2026.

FY 2023 Accomplishments
- Sustained labor base that spans multiple programs to meet current stockpile deliverables and NNSA's production mission.
- Supported the development of an initial Weapon Quality Management System (WQMS) Dashboard to help the Federal Team monitor the health of the NNSA NSE.

- Executed over 650k hours in support of Programmatic Equipment Maintenance.
- Completed over 95k calibrations for equipment and tooling in support of production activities.
- Provided independent quality engineers and staff for the W80-4 and W87-1 production realization efforts, Stockpile Sustainment, and Pit Production Qualification programs by supporting >1,200 Engineering Authorizations, >50 Engineering Evaluations, and >140 Product Realization Teams.
- Maintained 100% data server availability for tritium process computing maintenance to support LLCE GTS production and GTS surveillance and classified communications/data management.
- 60% complete for Mass Spec cold startup testing; 10% complete on Room Modifications for Environmental Conditioned Space.
- Completed deployment of initial Enterprise Capacity Analysis capability.
- Completed New Brunswick Laboratory recertification of Pu Isotopic Certified Reference Material (CRM).
- Re-established Vendor/Contractor Field Representatives (VCFRs) Summit.

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Production Operations $630,894,000	**Production Operations $816,567,000**	**Production Operations +$185,673,000**
Supported base labor operations and activities at: • KCNSC: Executed all production floor programmatic equipment maintenance, performed calibration services, analytical sciences, industrial engineering, and production/materials management in support of building, inspecting, and selling Non-Nuclear Components (NNCs). • LANL: Supported manufacturing of detonators and detonator cable assemblies. • LLNL: Supported Independent quality engineers for Stockpile Major Modernization and Sustainment Programs. • Pantex: Executed multi-system hardware procurements, testing & storage, production equipment maintenance for special tooling and Weapon Operations. On-site transportation of Special Nuclear Materials (SNM) and High-Explosives. • Y-12: Supported corrective & preventative maintenance for production equipment and accountability & control activities for SNM. • SNL: Executed programmatic equipment maintenance for Microsystems and Engineering Sciences Applications Complex (MESA) & Primary Standards Lab (PSL); supports development, qualification & production of Neutron Generator Assemblies (NGA). • SRS: Supported tritium process controls with classified/unclassified computing systems and	Support base labor operations and activities at: • KCNSC: Executes all production floor programmatic equipment maintenance, performs calibration services, analytical sciences, industrial engineering, and production/materials management in support of building, inspecting, and selling NNCs. • LANL: Support manufacturing of detonators and detonator cable assemblies; non-nuclear component focused MQMC. • LLNL: Support Independent quality engineers for Stockpile Major Modernization and Sustainment Programs. • Pantex: Execute multi-system hardware procurements, testing and storage, production equipment maintenance for special tooling and Weapon Operations. On-site transportation for Weapons Staging, SNM and High-Explosives. • Y-12: Execute corrective and preventative maintenance for production equipment and accountability and control activities for SNM. • SNL: Execute programmatic equipment maintenance for MESA and PSL; supports development, qualification, and production of NGA shippable items and shelf-life units including detonators and detonator cable assemblies; support base capability sustainment support for Power Sources and Energetics technologies between modernization programs.	• The increase represents the expanded requirements for non-nuclear components, production equipment maintenance, nuclear material accountability, and Production Technicians/Engineers in support of Weapon Program schedules and deliverables. This scope addresses the increased need for hiring, equipment service contracts, procurement of critical spare parts, equipment, & components that reduces risk of increasing Corrective Maintenance and production downtime, and sustainment for production floor parts tracking and material accountability systems.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
programmatic equipment for GTS reservoir gas analysis. • HQ: Supported base operations for New Brunswick Laboratory (NBL); supported and executed Enterprise Capacity modeling across the NNSA Nuclear Enterprise.	• SRS: Support tritium process controls with classified/unclassified computing systems and programmatic equipment for GTS reservoir gas analysis. • HQ: Execute base operations for NBL; supports and executes Enterprise Capacity modeling across the NNSA Nuclear Enterprise.	

Stockpile Management
Nuclear Enterprise Assurance

Overview

The Nuclear Enterprise Assurance (NEA) subprogram actively manages subversion risks to nuclear weapons and associated design, production, and testing capabilities throughout the weapons acquisition process. NEA enables the responsible use of digital technologies in the modernization of weapons, facilities, and engineering capabilities, by preventing, detecting, and mitigating potential consequences of subversion in digital technologies, the supply chain, and other threat pathways. NEA includes technical and governance activities for the assurance of components integral to weapon systems, operational technologies directly related to weapons, and capabilities that cross-cut multiple weapons programs.

Stockpile Management
Nuclear Enterprise Assurance

Description

Nuclear Enterprise Assurance (NEA) ensures the Nuclear Security Enterprise (NSE) actively manages subversion risks to the nuclear weapons stockpile and associated design, production, and testing capabilities from all subversion threat pathways. Of particular concern, digital technologies introduce new vulnerability characteristics and multiple new susceptible pathways that, if compromised, can produce unacceptable physical impacts to safety, the environment, weapon performance, and loss of capabilities. Using the nuclear weapon digital assurance (NWDA) process (the component of NEA focused on digital threats), NEA enables risk-managed adoption of leading-edge technologies to meet emerging military requirements and reduce modernization schedules and costs. NEA maintains a team of multi-disciplinary experts who perform rapid assessments, develop tools and assurance methods, and provide recommended mitigations. Close coordination is maintained across NNSA and other agencies to stay informed of current threats and best practices.

NEA focuses on technical, governance, and integration activities for the assurance of nuclear weapons, nuclear weapon enabling capabilities, and crosscutting functions and programs. The NEA program has four major activities:

(1) Assurance Evaluations and Recommendations – Cross-site, multi-disciplinary teams of subject matter experts from all NNSA sites who rapidly perform vulnerability risk assessments; develop and mature assurance methods; and provide recommended mitigations and implementation plans across NNSA programs. These activities also address non-program-specific NEA risks (e.g., supply chain integrity) through cross-cutting capabilities and process development.

(2) Tools and Capabilities – Cross-cutting and non-program-specific tools and capabilities that assist in vulnerability discovery, consequence analysis, and mitigation implementation.

(3) Policy, Requirements, and Oversight – Activities include developing and informing NNSA and DOE policies, orders, and directives to ensure integrated governance and compliance with federal law; coordination with DOD and UK partners; and establishing quantifiable metrics to assess the performance of NEA policies, requirements, and NSE execution.

(4) Workforce Standards – Creates standards and processes for NSE-wide NEA awareness, training, and skills development. Activities include integrating an NWDA approach for weapons and associated design, production, and testing capabilities throughout the NSE.

Highlights of the FY 2025 Budget Request

- Establish cross-site, multi-disciplinary assurance capability.
- Address highest priority subversion risks at each of the eight NNSA sites.
- Institute cybersecurity of nuclear weapon policy, requirements, and oversight processes.
- Mature NEA training and qualification programs for the workforce.
- Prepare a comprehensive strategy for inventorying the range of systems that are potentially at risk in the operational technology (OT) and nuclear weapons information technology (NWIT) environments as per FY 2024 NDAA section 3222.

FY 2026 – FY 2029 Key Milestones

- Address most significant subversion risks as determined by mission impact at all eight NNSA sites.
- Institutionalize NEA policy, training, and qualification programs across NNSA.
- Integrate cybersecurity risk management into the nuclear weapon acquisition process.
- Mature counter-subversion tools and capabilities and assurance standards for the workforce.
- Execute a comprehensive strategy for inventorying the range of systems that are potentially at risk in the OT and NWIT environments as per FY 2024 NDAA section 3222.

FY 2023 Accomplishments

- Established a government-led NEA Core Team of multidisciplinary subject matter experts (SMEs).
- Provided technical support and expertise to the Air Force and Office of the Secretary of Defense.
- Developed an implementation plan for long-term assurance of non-nuclear components logistics systems.
- Established and improved NEA assurance laboratories and tools.

- Completed NEA assessments and mitigation plans for highest mission-impacting operational technologies at each of the eight NNSA sites.

Nuclear Enterprise Assurance (NEA)
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Nuclear Enterprise Assurance (NEA) $48,911,000	**Nuclear Enterprise Assurance (NEA) $75,002,000**	**Nuclear Enterprise Assurance (NEA) +$26,091,000**
• Developed NWIT policy, processes, and requirements. • Established initial NWIT training and certification program. • Established a government-led NEA Core Team of multidisciplinary SMEs to rapidly respond to high-priority challenges. • Established NEA Core Team qualification program. • Initiated site-specific NEA subject matter expert teams. • Developed implementation plan for long-term assurance of non-nuclear components logistics systems. • Completed NEA assessments and mitigation plans for highest mission-impacting operational technologies at each of the eight NNSA sites. • Improved and expand NEA assurance laboratories and tools.	• Reduce the risk of subversion to the stockpile by establishing a baseline set of capabilities for nuclear weapon cybersecurity. • Enhance the NEA supply chain risk management capability. • Exercise a government-led NEA Core Team of multidisciplinary SMEs to rapidly respond to high-priority challenges. • Create efficiency and grow capacity by developing NEA Capability Centers that provide specific NEA tools and capabilities to the NSE. • Execute coordinated NEA incident response. • Identify and address multi-agency challenges by executing the NNSA-DOD Enterprise Assurance Workshop. • Co-lead the NNSA-DOD Software Assurance Community of Practice • Conduct IT/OT red team/blue team exercises to inform information sharing and incident response. • Mature NEA workforce development. • Develop knowledge hubs to enable sharing of NEA skills, tools, and capabilities. • Develop an OT and NWIT comprehensive strategy as per FY 2024 NDAA section 3222. • Establish a Nuclear Security Enterprise NEA integration working group.	• The increase represents the maturation of the NEA program as sites, laboratories, and plants institutionalize NEA processes and policies; procure and develop tools and capabilities; and train the workforce. This scope includes: investments in staff, software, and equipment for NEA Capability Centers; upgrades to countersubversion analysis laboratories equipment and methods; establishment of nuclear weapon cybersecurity policies and requirements throughout the weapons acquisition process; and development of NEA workforce pipelines, professional qualification programs, and knowledge preservation programs.

Stockpile Management
Capital Equipment Summary
($K)

	Total	Prior Years	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted ($)
Capital Equipment (> $500K)						
Total Non-MIE Capital Equipment (TEC <$10M)	N/A	N/A	134,171	92,954	99,576	-34,595
Automated Reservoir Management System (ARMS) 3, SRS	46,500	0	0	0	5,000	+5,000
9201-5N Dye Pent/Ultrasonic Tanks, Y-12	18,000	0	0	0	18,000	+18,000
9204-2E High Temperature Ovens (Final Assembly), Y-12	18,000	0	0	18,000	0	0
9998 Direct Caster #2, Y-12	11,516	0	0	11,516	0	+0
Component Canning Box, Y-12	15,000	0	0	0	0	0
Solution Heat Treat Furnace, Y-12	18,000	0	0	18,000	0	0
Total, Capital Equipment	**N/A**	**N/A**	**134,171**	**140,470**	**122,576**	**-11,595**

Outyears for Capital Equipment Summary
($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
Capital Equipment (> $500K)					
Total Non-MIE Capital Equipment (TEC <$10M)	107,180	89,010	90,880	92,788	N/A
Automated Reservoir Management System (ARMS) 3, SRS	0	0	0	0	41,500
Component Canning Box, Y-12	0	15,000	0	0	0
Total, Capital Equipment	**107,180**	**104,010**	**90,880**	**92,788**	**N/A**

Production Modernization

Overview
The Production Modernization program is responsible for modernizing the facilities, infrastructure, and equipment that produce materials and components to meet stockpile requirements and maintain the Nation's nuclear deterrent. The program encompasses six major subprograms that sustain the Nation's nuclear weapons stockpile.

Primary Capability Modernization
The Primary Capability Modernization program consolidates the management of primary-stage material processing and component production capabilities in the National Nuclear Security Administration's (NNSA) nuclear security enterprise. The program includes (1) Plutonium Modernization and (2) High Explosives and Energetics (HE&E) Modernization.

Secondary Capability Modernization
The Secondary Capability Modernization program includes capabilities for the secondary stage of nuclear weapons in the nuclear security enterprise. This includes ensuring the availability of strategic materials and other sub-component material streams that are managed by NNSA, as well as modernizing the facilities and operations required to process these materials, fabricate, and assemble the final components. This requires sustained resources across a multi-year period to systematically plan and execute all phases of this effort. The program includes (1) Enriched Uranium Modernization, (2) Depleted Uranium Modernization, (3) Lithium Modernization, 4) Advanced Materials and Capabilities Modernization (formerly Special Materials), (5), Mission Delivery Modernization (formerly Secondary Stage Capability Modernization), (6) the Lithium Processing Facility (LPF), and (7) the Uranium Processing Facility (UPF).

Tritium and Domestic Uranium Enrichment
The Tritium and Domestic Uranium Enrichment program consists of two parts: (1) Tritium Modernization produces, recovers, and recycles tritium to support national security requirements and (2) Domestic Uranium Enrichment (DUE) establishes a reliable supply of enriched uranium to support U.S. national security needs.

Non-Nuclear Capability Modernization
The Non-Nuclear Capability Modernization (NNCM) program modernizes the capabilities needed the for design, qualification, production, and surveillance of non-nuclear components for all weapon systems. NNCM activities include modernizing existing equipment and infrastructure, developing new capabilities, providing additional capacity, and implementing strategies to increase efficiency.

Capability Based Investments
The Capability Based Investments (CBI) program executes projects for equipment, tools, supporting facilities, and infrastructure directly related to enduring, multi-program weapon activity capabilities, mission deliverables, and reduction of programmatic risks across the nuclear security enterprise.

Warhead Assembly Modernization
The Warhead Assembly Modernization (WAM) program modernizes the capabilities needed to execute warhead assembly/disassembly operations for weapon modernization, surveillance, and dismantlement programs. Warhead Assembly Modernization is a new budget line beginning in FY 2025.

Line-Item Construction
Production Modernization line-item construction projects are critical to revitalizing the program-specific capabilities that directly support the nuclear weapons programs. These projects ensure the strategic material industrial base necessary for stockpile modernization is constructed for the nuclear security enterprise and will provide the base materials for component production. These projects will also replace obsolete, unreliable facilities and infrastructure to reduce safety and program risk while improving responsiveness, capacity, and capabilities.

Production Modernization
Funding ($K)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
Production Modernization					
Primary Capability Modernization					
Plutonium Modernization					
Los Alamos Plutonium Modernization					
Los Alamos Pit Production[a]	767,412	767,412	984,611	+217,199	+28.3%
21-D-512 Plutonium Pit Production Project, LANL	588,234	588,234	470,000	-118,234	-20.1%
15-D-302 TA-55 Reinvestments Project Phase 3, LANL	30,002	30,002	39,475	+9,473	+31.6%
07-D-220-04 Transuranic Liquid Waste Facility, LANL	24,759	24,759	0	-24,759	-100.0%
04-D-125 Chemistry and Metallurgy Research Replacement Project, LANL	138,123	138,123	0	-138,123	-100.0%
Total, Los Alamos Plutonium Modernization	1,548,530	1,548,530	1,494,086	-54,444	-3.5%
Savannah River Plutonium Modernization					
Savannah River Pit Production[b]	58,300	58,300	75,332	+17,032	+29.2%
21-D-511 Savannah River Plutonium Processing Facility, SRS	1,200,000	1,200,000	1,200,000	0	0%
Total, Savannah River Plutonium Modernization	1,258,300	1,258,300	1,275,332	+17,032	+1.4%
Enterprise Pit Production Support[c]	88,993	88,993	121,964	+32,971	+37.0%
Total, Plutonium Modernization	2,895,823	2,895,823	2,891,382	-4,441	-0.2%
High Explosives & Energetics	101,380	101,380	115,675	+14,295	+14.1%
23-D-516 Energetic Materials Characterization Facility, LANL	19,000	19,000	0	-19,000	-100.0%
21-D-510 HE Synthesis Formulation and Production, PX	108,000	108,000	0	-108,000	-100.0%
15-D-301 HE Science & Engineering Facility, PX	20,000	20,000	15,000	-5,000	-25.0%
Total, High Explosives & Energetics	248,380	248,380	130,675	-117,705	-47.4%
Total, Primary Capability Modernization	3,144,203	3,144,203	3,022,057	-122,146	-3.9%
Secondary Capability Modernization	536,363	536,363	755,353	+218,990	+40.8%
18-D-690 Lithium Processing Facility, Y-12	216,886	216,886	260,000	+43,114	+19.9%
06-D-141 Uranium Processing Facility, Y-12	362,000	362,000	800,000	+438,000	+121.0%
Total, Secondary Capability Modernization	1,115,249	1,115,249	1,815,353	+700,104	+62.8%

[a] Congressional control title change requested for FY 2025 to Los Alamos Pit Production from Los Alamos Plutonium Operations.
[b] Congressional control title change requested for FY 2025 to Savannah River Pit Production from Savannah River Plutonium Operations.
[c] Congressional control title change requested for FY 2025 to Enterprise Pit Production Support from Enterprise Plutonium Support.

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 vs FY 2023	
				$	%
Tritium and Domestic Uranium Enrichment	**506,649**	**506,649**	**661,738**	**+155,089**	**+30.6%**
18-D-650 Tritium Finishing Facility, SRS	**73,300**	**73,300**	**0**	**-73,300**	**-100.0%**
Total, Tritium and Domestic Uranium Enrichment	**579,949**	**579,949**	**661,738**	**+81,789**	**+14.1%**
Non-Nuclear Capability Modernization	**123,084**	**123,084**	**141,300**	**+18,216**	**+14.8%**
22-D-513 Power Sources Capability, SNL	**0**	**0**	**50,000**	**50,000**	**0%**
Total, Non-Nuclear Capability Modernization	**123,084**	**123,084**	**191,300**	**+68,216**	**+55.4%**
Capability Based Investments	**154,220**	**154,220**	**153,244**	**-976**	**-0.6%**
Warhead Assembly Modernization[a]	**0**	**0**	**34,000**	**+34,000**	**0%**
Total, Production Modernization	**5,116,705**	**5,116,705**	**5,877,692**	**+760,987**	**+14.9%**

[a] Warhead Assembly Modernization is a new budget line beginning in FY 2025.

Production Modernization
Outyear Funding ($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Production Modernization				
Primary Capability Modernization				
Plutonium Modernization				
Los Alamos Plutonium Modernization				
Los Alamos Pit Production	945,480	972,088	1,018,468	1,105,595
21-D-512 Plutonium Pit Production Project, LANL	770,000	900,500	905,000	509,955
15-D-302 TA-55 Reinvestments Project Phase 3, LANL	12,942	0	0	0
07-D-220-04 Transuranic Liquid Waste Facility, LANL	0	0	0	0
04-D-125 Chemistry and Metallurgy Research Replacement Project, LANL	100,000	110,000	110,000	20,000
Total, Los Alamos Plutonium Modernization	1,828,422	1,982,588	2,033,468	1,635,550
Savannah River Pit Production	139,510	164,986	186,679	212,302
21-D-511 Savannah River Plutonium Processing Facility, SRS	1,480,000	1,760,000	1,930,000	2,169,000
Total, Savannah River Plutonium Modernization	1,619,510	1,924,986	2,116,679	2,381,302
Enterprise Pit Production Support	143,869	124,410	124,473	123,916
Total, Plutonium Modernization	3,591,801	4,031,984	4,274,620	4,140,768
High Explosives & Energetics				
High Explosives & Energetics	107,173	106,565	112,938	113,728
21-D-510 HE Synthesis Formulation and Production, PX	0	0	0	175,924
15-D-301 HE Science & Engineering Facility, PX	5,907	0	0	0
Total, High Explosives & Energetics	113,080	106,565	112,938	289,652
Total, Primary Capability Modernization	3,704,881	4,138,549	4,387,558	4,430,420
Secondary Capability Modernization	718,101	764,887	877,989	906,875
18-D-690 Lithium Processing Facility, Y-12	189,009	193,000	198,000	266,000
06-D-141 Uranium Processing Facility, Y-12	596,021	354,885	251,000	0
Total, Secondary Capability Modernization	1,503,131	1,312,772	1,326,989	1,172,875

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Tritium and Domestic Uranium Enrichment	**637,911**	**670,130**	**674,684**	**679,402**
18-D-650 Tritium Finishing Facility, SRS	**0**	**0**	**103,435**	**200,000**
Total, Tritium and Domestic Uranium Enrichment	**637,911**	**670,130**	**778,119**	**879,402**
Non-Nuclear Capability Modernization				
Non-Nuclear Capability Modernization	**123,772**	**150,698**	**160,343**	**155,180**
22-D-513 Power Sources Capability, SNL	**115,000**	**130,000**	**23,713**	**0**
Total, Non-Nuclear Capability Modernization	**238,772**	**280,698**	**184,056**	**155,180**
Capability Based Investments	**146,478**	**161,417**	**162,533**	**163,671**
Warhead Assembly Modernization				
Warhead Assembly Modernization	**59,336**	**54,965**	**116,298**	**117,112**
Total, Warhead Assembly Modernization	**59,336**	**54,965**	**116,298**	**117,112**
Total, Production Modernization	**6,290,509**	**6,618,531**	**6,955,553**	**6,918,660**

Production Modernization
Explanation of Major Changes ($K)

	FY 2025 Request vs FY 2023 Enacted
Production Modernization	
Plutonium Modernization	
Los Alamos Plutonium Modernization	
Los Alamos Pit Production	**+217,199**
Increase supports equipment purchases and installation activities and the hiring, training, qualification, and retention of additional staff to support the war reserve (WR) pit production ramp-up. Support for increase rate capacity as LANL ramps up to full-rate capacity.	
21-D-512 Plutonium Pit Production Project, LANL	**-118,234**
Decrease reflects the use of carryover, and adjustment of pre-CD-2 project plan for the establishment of a performance baseline for the 30 pits per year (ppy) reliable equipment set, continuation of design efforts for the training center, and updates to acquisition/tailoring for the remainder of the subprojects at Los Alamos National Laboratory's (LANL) Plutonium Facility (PF)-4.	
15-D-302 TA-55 Reinvestments Project, Phase 3, LANL	**+9,473**
Increase supports the continued construction as the project progresses to complete Decontamination & Decommissioning of the old fire alarm system in FY 2025 and CD-4 in FY 2027.	
07-D-220-04 Transuranic Liquid Waste Facility, LANL	**-24,759**
Decrease reflects the use of carryover to execute construction activities.	
04-D-125 Chemistry and Metallurgy Research Replacement, Project, LANL	**-138,123**
Decrease reflects the use of carryover to execute construction activities in FY 2025.	
Savannah River Plutonium Modernization	
Savannah River Pit Production	**+17,032**
Increase supports activities necessary to mature the Savannah River Plutonium Modernization Program, develop plans to optimize the schedule from Savannah River Plutonium Processing Facility (SRPPF) CD-4 approval to full rate production, and build production competency.	

	FY 2025 Request vs FY 2023 Enacted
21-D-511 Savannah River Plutonium Processing Facility, SRS	**0**
Consistent level of funding supports five subprojects as they near design completion and one subproject in construction, as well as activities associated with long-lead procurements and site preparation to accelerate and reduce risk to overall project schedule.	
Enterprise Pit Production Support	**+32,971**
Increase supports minor construction projects at the Nevada National Security Site (NNSS) Device Assembly Facility (DAF); modernization of equipment at Lawrence Livermore National Laboratory (LLNL) needed for pit certification; and, increased non-nuclear component production at the Kansas City National Security Campus (KCNSC).	
High Explosives and Energetics	
High Explosives and Energetics	**+14,295**
Increase reflects vendor qualification for a new FK-800 replacement capability, amplified responsibilities for the W93, continuation of the Naval Surface Warfare Center Indian Head Division project, and Other Project Costs for the HE Science and Engineering Facility.	
23-D-516 Energetic Materials Characterization Facility, LANL	**-19,000**
Decrease reflects decision to pause project due to capacity constraints at LANL. Pausing the project increases executability at for higher priority projects.	
21-D-510 HE Synthesis, Formulation, and Production, PX	**-108,000**
Decrease reflects decision to pause project due capacity constraints at Pantex Plant (PX). Pausing HESFP will relieve competition for construction resources.	
15-D-301 HE Science and Engineering Facility, PX	**-5,000**
Decrease reflects ramping down of construction activities. FY 2025 funding will be used to continue the construction of the facility and to begin document preparation for readiness assessment activities.	
Secondary Capability Modernization	**218,990**
Increase reflects new scope to invest in emerging risk areas at Y-12, including the Plant Lab, Assembly Disassembly facility, and General Manufacturing operations, to meet future mission demand and prevent failures or bottlenecks. It also reflects investments to reduce risk in depleted uranium and lithium operations, support depleted uranium operations beyond the 2030s, and support new necessary capabilities to produce other future weapon system components.	

	FY 2025 Request vs FY 2023 Enacted
18-D-690, Lithium Processing Facility, Y-12 Increase reflects continued site preparation, beginning some long-lead procurements, developing and preparing CD-2/3 package, and continuing work on East End Substation in support of the 2028 need date.	**+43,114**
06-D-141 Uranium Processing Facility, Y-12 Increase supports execution of construction, startup testing, and commissioning activities for the Main Process Building, Salvage and Accountability Building, and Process Support Facilities. Additional funds were needed to continue this work due to increased cost and schedule estimates.	**+438,000**
Tritium and Domestic Uranium Enrichment Increase reflects needs for labor and material purchases for Domestic Uranium Enrichment centrifuge development as the program advances towards larger-scale research and development (R&D) demonstrations. Increase also reflects completion of the DUE Pilot Plant options study and the initiation of design activities for the DUE Pilot Plant. The increase is partially offset using prior year carryover. Slight increase for Tritium Modernization reflects investments to increase confidence in the overall tritium supply chain.	**+155,089**
18-D-650, Tritium Finishing Facility, SRS Decrease reflects decision to pause project to have scarce labor resources at the SRS focus on the Savannah River Plutonium Processing Facility. Carryover will be used to execute the site prep subproject, complete 30% design for the process building, and 60% design for classified processes.	**-73,300**
Non-Nuclear Capability Modernization Increase reflects support for the Kansas City expansion efforts through equipment procurements and the modernization of environmental testing capabilities at Sandia National Laboratories, critical to ensuring non-nuclear components can survive Stockpile to Target Sequence environments.	**+18,216**
22-D-513, Power Sources Capability, SNL Increase reflects new execution strategy for the project based on the completion of preliminary design and supports the initiation of long lead procurements and site preparation.	**+50,000**
Capability Based Investments No significant change.	**-976**

	FY 2025 Request vs FY 2023 Enacted
Warhead Assembly Modernization Increase reflects initiation of a new program to modernize the capabilities needed to execute warhead assembly/disassembly operations.	**+34,000**
Total, Production Modernization	**+760,987**

Description
The Plutonium Modernization program provides funding for efforts across the nuclear security enterprise to restore the Nation's capability to produce 80 ppy. NNSA will provide additional details regarding Plutonium Modernization activities to Congressional staff through quarterly pit production briefings, as required by the FY 2020 Energy and Water Development and Related Agencies Appropriations Act. NNSA remains committed to achieving the pit production capability goals on the path to 80 ppy, including the capability to produce not less than 30 pits, at LANL.

Plutonium Modernization activities include the following:

- **Los Alamos Plutonium Modernization**: Activities include Los Alamos Pit Production, which provides for the operational expenses needed to meet pit production requirements at LANL, including activities to hire, train, qualify, and retain required pit production personnel; recapitalization of equipment for WR pit production; pit production process qualification and certification activities; plutonium material supply chain activities; tooling design and fabrication; and Plutonium Modernization's share of operational expenses for PF-4. This funding also supports the manufacturing of precision plutonium devices for science-related evaluation. In FY 2025, LANL will continue process qualification and certification activities to produce the first WR pit and ramp up capacity as LANL progresses toward full rate capacity. Los Alamos Pit Production also provides funding for key enabling activities and safety management programs in PF-4, including a radiological control program, facility, equipment maintenance, a criticality safety program, shipping and receiving, authorization basis, work control documentation, training and qualification, legacy disposition, waste management, material, recycle, recovery and storage support to plutonium supply chain activities, and facility availability to maintain plutonium capabilities.

  Los Alamos Plutonium Modernization also includes four line-item projects at Los Alamos National Laboratory. The Los Alamos Plutonium Pit Production Project (LAP4), 21-D-512 funds capital acquisitions required to increase production capacity at PF-4 from 10 ppy to no fewer than 30 ppy, as well as associated infrastructure investments at LANL to support pit production. FY 2025 funding will support efforts to mature design documentation for the training facility, continue the removal of legacy equipment in PF-4, install new production equipment under the 30B and 30R subprojects, and support construction of the west entry control facility.

  The TA-55 Reinvestment Project, Phase 3, 15-D-302 funding will continue construction activities to modernize fire alarm panels providing a vital safety function in PF-4.

  Carryover funding for the Transuranic Liquid Waste Facility (TLW), 07-D-220-04 project will continue to support the construction of a new hazard category 3 nuclear facility to house processing equipment capable of treating transuranic (TRU) liquid waste, a TRU liquid influent storage, and necessary utilities.

  Carryover funding for the Chemistry and Metallurgy Research Replacement Project, 04-D-125 will be used to continue design and baseline the RC3 subproject and aid in early construction/procurement of long-lead items. Carryover funding for the PEI2 subproject will support construction activities to improve TA-55 and PF-4 personnel and vehicular ingress/egress, levels of worker preparation/staging and warehousing for relocated AC/MC operations and personnel, and procurement and installation of equipment.

- **Savannah River Plutonium Modernization**: Supports the continued establishment of a program office at SRS to enable pit production development efforts, train and hire future production staff, and support future production and operations planning. Program plans and processes will continue to be developed and matured across 13 functional areas to support production competency. Until the High-Fidelity Training and Operations Center training center is fully operational, SRS will use existing facilities at both SRS, LANL, and LLNL to conduct and support training activities. Workforce development activities will continue including engagement with LANL through the Knowledge Transfer

program and with LANL and LLNL through the Mutual Support program, as well as expansion of university engagement to increase opportunities specific to workforce needs.

Additionally, the Savannah River Plutonium Processing Facility (SRPPF) project, 21-D-511, repurposes the partially completed Mixed Oxide Fuel Fabrication Facility (MFFF) to achieve a production capability of 50 ppy consistent with the NNSA's recommended alternative for pit production. FY 2025 activities focus on maturing the design of the main process building, which includes production equipment and gloveboxes, safety systems, facility utilities, and support infrastructure. Other supporting activities will continue to focus on the design of subprojects for utilities/site preparation, the high-fidelity training and operations center, construction of the administrative building, as well as continued early site work such as Dismantle & Removal (D&R) of old MFFF equipment, wall coatings removal, early procurements of long lead equipment items, and early work on the Sandfilter and Fanhouse Subproject. Project funding will continue to support ongoing glovebox fabricator support for capacity initiatives.

- **Enterprise Pit Production Support:** Provides funding for activities that support pit production across the nuclear security enterprise, including Kansas City National Security Campus production of non-nuclear components, certification activities, management of the plutonium pit Product Realization Team (PRT) at Lawrence Livermore National Laboratory (LLNL), plutonium material supply chain activities at PX, and material management and supporting staging activities at the Nevada National Security Site (NNSS).

Highlights of the FY 2025 Budget Request

- Support pit production capability modernization in accordance with Department of Defense requirements.
- Qualify pit production processes and perform certification tests to produce the first WR pit.
- Continue investments to install additional production equipment and recapitalize end-of-life equipment in PF-4 to reduce pit production mission risk.
- Continue hiring, training, and qualifying staff to ramp up future pit production.
- Improve PF-4 vault facilities efficiency through inventory work-off and optimization of footprint to support the transition to plutonium production and improve Material at Risk (MAR) posture.
- Continue CMR de-inventory activities in support of the CMR Facility Exit Strategy.
- Provide storage/staging and inventory management capabilities in support of the plutonium pit production mission.
- Complete Device Assembly Facility (DAF) Enhanced Staging Program Project to provide staging support to pit production.
- Continue to mature the new SRS Plutonium Modernization Program to include expanded knowledge transfer and training.
- Continue efforts to mature the design of the SRPPF project.
- Continue execution of 13 SRPPF CD-3X packages to support site preparation and long lead procurements.
- Continue construction of SRPPF Administrative Building Subproject (Y810).

FY 2026 – FY 2029 Key Milestones

- Achieve initial 30 pits per year production capability (2028), with CD-4 for the 30B LAP4 subproject planned for 2030.
- Obtain CD-2/3 for SRPPF (2026).
- Obtain CD-4 for High-Fidelity Training and Operations Center (HFTOC) as part of SRPPF (2028).
- Obtain CD-4 for West Entry Control Facility as part of LAP4 (2028).

FY 2023 Accomplishments

- Produced 9 pit builds in PF-4 successfully to support process qualification and product certification toward WR pit production.
- Installed equipment in PF-4 to support increased production.
- Improved Transuranic (TRU) waste management and characterization capabilities to support safe and efficient TRU waste disposition at LANL.
- Began WR production of non-nuclear components at KCNSC.
- Achieved placement of 6.5 Full-Time Equivalents (FTEs) of mutual support to LANL production activities that build on the Knowledge Transfer Program (KTP).

- SRPPF received approval and started work on the Dismantle & Removal CD-3A scope.
- Installed and turned over to operations, the first two pieces of equipment in the Machining Training Center at SRS.
- Obtained LAP4 CD-2/3 for 30 Base Installation (30B) Subproject in January 2023.

Plutonium Modernization
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Plutonium Modernization $2,895,823,000	**Plutonium Modernization $2,891,382,000**	**Plutonium Modernization -$4,441,000**
Los Alamos Plutonium Modernization $1,548,530,000	***Los Alamos Plutonium Modernization $1,494,086,000***	***Los Alamos Plutonium Modernization -$54,444,000***
Los Alamos Plutonium Operations $767,412,000	***Los Alamos Pit Production $984,611,000***	***Los Alamos Pit Production +$217,199,000***
• Maintained base personnel while adding additional personnel to ramp up work and sustained pit-manufacturing capability. • Continued to recapitalize end-of-life equipment vital to the pit manufacturing mission. • Continued engineering evaluation of processes and conducted pit certification activities. • Provided safe and secure storage and staging capabilities, management of nuclear materials, and disposition planning (including analysis, forecasting, and modeling) in support of plutonium missions at LANL. • Continued to recover, recycle, and disposition of programmatic nuclear materials in support of the pit production mission at LANL. • De-inventoried legacy special nuclear material at CMR, including analytical sample reserves, in accordance with the CMR Facility Exit Plan. • Continued support of TRP-III and TLW OPCs.	• Maintain base personnel while adding additional personnel to ramp up work and sustain pit-manufacturing capability. • Continue to recapitalize end-of-life equipment vital to the pit manufacturing mission. • Provide safe and secure storage and staging capabilities, management of nuclear materials, and disposition planning (including analysis, forecasting, and modeling) in support of plutonium missions at LANL. • Continue to recover, recycle, and disposition of programmatic nuclear materials in support of the pit production mission at LANL. • De-inventory legacy special nuclear material at CMR, including analytical sample reserves, in accordance with the CMR Facility Exit Plan. • Continue support of TRP-III and TLW OPCs. • Begin WR pit production. • Fund Workforce Development Grant supporting minority serving institutions in New Mexico (NM). • Continue capital asset projects including MIE and MC projects.	• Increased personnel to support 30 ppy. • Increased production to support the ramp up to 30 ppy. • Begin WR pit production. • Continue certification activities to support new equipment coming online. • Plutonium Premium Pay initiative to increase retention of specialized workers.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
21-D-512 Plutonium Pit Production Project, LANL $588,234,000	***21-D-512 Plutonium Pit Production Project, LANL $470,000,000***	***21-D-512 Plutonium Pit Production Project, LANL -$118,234,000***
• Completed design documentation for WECF. • Worked on the design for the training center. • Achieved CD-2/3 for 30B subproject. • Continued pursuing long-lead procurements of gloveboxes and standalone equipment.	• Continue D&D of outdated equipment and gloveboxes. • Install gloveboxes and equipment under the 30 base and 30 reliable subprojects. • Continue construction for the West Entry Control Facility. • Complete design of the training and development center.	• Decrease reflects the use of carryover and aligns with pre-CD-2 project plan to support multiple subprojects under construction.
15-D-302 TA-55 Reinvestments Project, Phase 3, LANL $30,002,000	***15-D-302 TA-55 Reinvestments Project, Phase 3, LANL $39,475,000***	***15-D-302 TA-55 Reinvestments Project, Phase 3, LANL +$9,473,000***
• Continued construction activities.	• Continue construction activities.	• Increased funding supports the construction activities during the final years of funding for the project.
07-D-220-04, Transuranic Liquid Waste Facility, LANL $24,759,000	***07-D-220-04, Transuranic Liquid Waste Facility, LANL $0***	***07-D-220-04, Transuranic Liquid Waste Facility, LANL -$24,759,000***
• Restarted construction activities.	• Continue construction activities.	• Construction activities in FY 2025 will be funded using carryover.
04-D-125 Chemistry and Metallurgy Research Replacement Project, LANL $138,123,000	***04-D-125 Chemistry and Metallurgy Research Replacement Project, LANL $0***	***04-D-125 Chemistry and Metallurgy Research Replacement Project, LANL -$138,123,000***
• Obtained CD-3C for long-lead procurement items for the PEI2 subproject. • Continue work to achieve CD-2/3 on the PEI2 subproject by May 2024. • Continued construction of ingress and egress facilities and design activities for equipment installation.	• No FY 2025 funding is being requested for CMRR. • Continue construction of ingress and egress facilities and design activities for equipment installation.	• Construction activities in FY 2025 will be funded using carryover.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Savannah River Plutonium Modernization $1,258,300,000	**Savannah River Plutonium Modernization $1,275,332,000**	**Savannah River Plutonium Modernization +$17,032,000**
Savannah River Plutonium Operations $58,300,000	***Savannah River Pit Production $75,332,000***	***Savannah River Pit Production +$17,032,000***
• Continued to mature the SRS program office to support future production activities. • Hired and trained staff in accordance with production competency plan across 13 functional areas. • Continued to establish Machining Training Center to support unclassified production competency development.	• Continue to mature the SRS program office to support future production activities. • Hire and train staff in accordance with production competency plan across 13 functional areas. • Continue funding for Workforce Development Program including Historically Black Colleges and Universities (HBCUs) in South Carolina.	• Increased funding supports hiring of additional personnel to support SRPPF staffing plan. • Increased operations and maintenance funds to support Machining Training Center. • Continue expanding Workforce Development Program to focus on SRPPF critical skillsets. • Expand Knowledge Transfer Program to send more SRS personnel to LANL.
21-D-511 Savannah River Plutonium Processing Facility, SRS $1,200,000	***21-D-511 Savannah River Plutonium Processing Facility, SRS $1,200,000***	***21-D-511 Savannah River Plutonium Processing Facility, SRS $0***
• Executed long lead procurement, demolition, removal (D&R), and site preparation activities. • Supported design maturation in anticipation of CD-2.	• Continue design maturity in support of CD-2/3. • Continue construction execution of the Administration Building Subproject. • Continue long lead procurement activities for gloveboxes and process equipment, bulk materials, and balance of plant (BOP) equipment for Main Process Building and the High-Fidelity Training and Operations Center Subprojects. • Continue site preparation activities for the Utilities, Site, and Infrastructure, High-Fidelity Training and Operations Center, and the Sandfilter and Fanhouse Subprojects.	• Consistent level of funding supports long lead procurement and site preparation activities across four subprojects to accelerate and reduce risk to overall project schedule.
Enterprise Plutonium Support $88,993,000	**Enterprise Pit Production Support $121,964,000**	**Enterprise Pit Production Support +$32,971,000**
• Continued LLNL certification activities associated with pit production to enable FPU of a WR pit at LANL in 2024. • Continued KCNSC non-nuclear component production. • Continued to support PRT management at LLNL.	• Continue LLNL certification activities associated with pit production to enable FPU of a WR pit at LANL in 2025. • Increase DAF capabilities to support pit certification activities.	• Increased support of DAF minor construction projects. • Support modernization of LLNL equipment to support certification work. • Increased non-nuclear component production at KCNSC in support of LANL and SRS operations.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
• Executed material management and supporting storage activities at NNSS. • Planned and executed shipping activities for plutonium material supply from Pantex.	• Continue KCNSC WR non-nuclear component production. • Continue to support PRT management at LLNL. • Execute Enhanced Staging Program at DAF in support of optimizing material management and staging activities at NNSS. • Plan and execute shipping activities for plutonium material supply from Pantex.	

Primary Capability Modernization
High Explosives and Energetics

Description

The High Explosives and Energetics program focuses on modernization and prioritization of High Explosives (HE) processing facilities and qualification of high explosive, pyrotechnic, and propellant materials for supplying the nuclear security enterprise across five M&O sites (Pantex Plant, SNL, LANL, LLNL, and NNSS). The HE&E program enables the production of HE and energetic materials required for an effective stockpile, including the main charge, boosters, detonators, actuators, timer/drivers, spin rockets, and the materials necessary to achieve nuclear weapon safety and security.

The HE&E program manages the capital investment of the HE&E infrastructure and equipment to modernize manufacturing capabilities in aging facilities and provide efficiencies in material processing to make a safer working environment.

The HE&E modernization program will do the following:

1. Manage the HE&E supply chain risk portfolio to ensure an internal nuclear security enterprise and external vendor base to maintain, manufacture, and deploy Mark Quality HE and energetics in support of weapons production.
2. Define and monitor the qualification standards of HE and energetic material.
3. Support the future development and production of novel HE and energetic material.
4. Define and ensure infrastructure capital investment strategies meet both HE&E material and component requirements to sustain and modernize the stockpile.

Highlights of the FY 2025 Budget Request

- Procure energetic material to meet the development and qualification needs of the B61-12, W80-4, W87-1, and W93.
- Complete final year of assessing four main charge options for the W93.
- Stabilize the supply chain and enable material/manufacturing maturation, where needed, to meet the energetic material requirements of the current and future stockpile modernization programs.
- Further develop PBX 9751 as a candidate for future main charge production.
- Refine manufacturing techniques for PBX 9505 and LX-22.
- Secure historical quantities of FK-800 from 3M to ensure continued IHE manufacturing while a new vendor is qualified.
- Develop an alternate vendor for the manufacturing of FK-800 for future IHE production requirements.
- Complete main works construction efforts for HESE.
- Obtain and demonstrate a new capability for insensitive high explosives qualification to hostile impulse environments by completing the construction of the Light Initiated High Explosives Facility, a full-scale testing environment at SNL.
- Conduct pilot scale Triaminotrinitrobenzene (TATB) synthesis and LX-17 formulation characterization.
- Conduct Dev 3 LX-17 Process Prove-In (PPI) and characterization for the W87-1.
- Achieve Mark Quality material production of PBX-9502 for the W80-4.
- Demonstrate the nuclear security enterprise's ability to manufacture titanium subhydride (TiH1.65) through an advanced equilibrium process to reconstitute titanium subhydride potassium perchlorate (THKP) production.

FY 2026 – FY 2029 Key Milestones

- Achieve Mark Quality IHE material production from Indian Head.
- Achieve CD-4 approval for HESE.
- Complete material specification for LX-17 high explosive and achieve Mark Quality production for the W87-1.
- Conduct the first full-scale live-HE system vulnerability test simulating a cold x-ray environment.
- Continue with the qualification of an alternate vendor for the manufacturing of FK-800.
- Execute predevelopment production for the W93 main charge.

FY 2023 Accomplishments

- Released the joint LANL/LLNL specification for TATB and PBX-9502.
- Continued resurrection of the production of PBX 9751.
- Reduced identified risks to supply chains by completing third-party testing to enable permanent shipping authorization of TKP-OP, TKP-IP, and THKP in support of W80-4 actuator production.
- Achieved synthesis and formulation of IHE material that met historical mechanical strength and performance testing requirements.
- Manufactured PPI Lot of PBX 9502 for the W80-4 at Holston Army Ammunition Plant (Holston).
- Partnered with the DoD for additional upgrades to Holston to further reduce toluene emissions and enable additional TATB production for both the DoD and DOE.
- Awarded the construction contract to provide a prototype TATB manufacturing capability at the Naval Surface Warfare Center, Indian Head.
- Installed the new nitrogen tanks at building 11-55 at Pantex to eliminate a risk in Hexanitrostilbene (HNS) production.

High Explosives and Energetics
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
High Explosives and Energetics $101,380,000	**High Explosives and Energetics $115,675,000**	**High Explosives and Energetics +$14,295,000**
• Facilitated the modernization of the HE&E infrastructure across the nuclear security enterprise. • Continued to establish a modern and robust production and manufacturing capability. • Continued to enhance Mark Quality production for next-generation explosive components and materials at SNL. • Produced high explosive material (LX-17 and LX-21) for the W87-1 program, reconstitute TKP-IP for energetic ignitors, process-prove-in PBX-9502 for the B61-12 and qualify PBX-9502 for the W80-4. • Began design and development work at the Indian Head. • Continued pilot plant parameter studies at Pantex and LLNL. • Developed LX-17 specification.	• Facilitate the modernization of the HE&E infrastructure across the nuclear security enterprise. • Continue to establish a modern and robust production and manufacturing capability. • Continue to enhance Mark Quality production for next-generation explosive components and materials at SNL. • Produce high explosive material (LX-17 and LX-21) for the W87-1 program, reconstitute TKP-IP for energetic ignitors, process-prove-in PBX-9502 for the B61-12 and qualify PBX-9502 for the W80-4. • Continue high explosives commissioning work at Indian Head. • Continue pilot plant parameter studies at Pantex and LLNL. • Secure increased quantities of FK-800 from 3M to ensure continue IHE manufacturing while a new vendor is qualified. • Develop an alternate vendor for the manufacturing of FK-800 for future IHE production requirements. • Provide OPCs for the HESE project.	• Increase reflects the establishment of a new FK-800 capability, amplified responsibilities for the W93, and continuation of the Indian Head project.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
23-D-516 Energetic Materials Characterization Facility, LANL $19,000,000	***23-D-516 Energetic Materials Characterization Facility, LANL $0***	***23-D-516 Energetic Materials Characterization Facility, LANL -$19,000,000***
• Completed DOE 413.3B activities in preparation for a CD-1 decision.	• Project is paused.	• Project is paused.
21-D-510 HE Synthesis, Formulation, and Production, PX $108,000,000	***21-D-510 HE Synthesis, Formulation, and Production, PX $0***	***21-D-510 HE Synthesis, Formulation, and Production, PX -$108,000,000***
• Completed the 100% design.	• Project is paused.	• Project is paused.
15-D-301 HE Science and Engineering Facility, PX $20,000,000	***15-D-301 HE Science and Engineering Facility, PX $15,000,000***	***15-D-301 HE Science and Engineering Facility, PX -$5,000,000***
• Continued the construction of the facility.	• Continue construction and begin document preparation for the readiness assessment activities.	• Decrease reflects ramp down of construction funding requirements.

Description
The Secondary Stage Production Modernization Office is maintaining, reconstituting, and upgrading capabilities and capacity to provide robust, flexible, and responsive security enterprise by:

- Maturing and inserting new technologies for better, safer, more efficient processes.
- Undertaking construction and acquisition projects to house processes in facilities that can support forecasted requirements.
- Extending life of existing facilities and equipment until replacements come online.
- Establishing new production capability for novel materials to replace their hazardous predecessors.

Enriched Uranium Modernization is modernizing enriched uranium operations to ensure delivery of secondary components needed to maintain the stockpile and support the Naval Reactors program and Nonproliferation programs.

Building 9212 at Y-12, which is more than 75 years old, contains the most hazardous enriched uranium operations and does not meet modern nuclear safety and security standards. The Enriched Uranium Modernization program implements elements of NNSA's Uranium Mission Strategy associated with decreasing mission dependency on Building 9212. by transitioning capabilities into existing facilities and the Uranium Processing Facility (UPF)and beginning post-operations deactivation and transition activities.

UPF will provide new floor space for enriched uranium casting, special oxide, and salvage capabilities. The UPF project includes the Main Process Building, Salvage and Accountability Building, Mechanical Electrical Building, and Process Support Facilities. FY 2025 funding supports the construction of the Main Process Building and Salvage and Accountability Building, and startup testing and commissioning activities of the Process Support Facilities.

The Enriched Uranium Modernization program is funding work to extend the life of Y-12's Building 9215 which will need to operate safely into the 2040s or beyond. The program is also improving the responsiveness and resiliency of Building 9215 by optimizing limited space to quickly adjust and accommodate unforeseen operational needs.

The program leverages capability relocations to UPF and the enduring facilities by modernizing existing enriched uranium capabilities and developing and deploying new technologies to reduce cost and improve manufacturing processes for nuclear weapon materials. These new technologies improve on existing Building 9212 capabilities by shortening production schedules, reducing risks, and enhancing personnel safety.

The program supplies the current stockpile with purified enriched uranium metal, while supporting the transition of new capabilities (e.g., Microwave Casting, Electrorefining, and Direct Chip Melt) into the new and enduring facilities. The program also provides a comprehensive storage capability to support a steady supply stream of material through peak production periods.

The Enriched Uranium Modernization program is in phase II of a services contract with a commercial vendor, Nuclear Fuel Services, for the establishment of an oxide to purified metal conversion capability, to bridge an oxide-to-metal capability gap, provide risk reduction to NNSA during a period of significant technology transition at Y-12, and increase the resiliency and responsiveness of the program.

The Enriched Uranium Modernization program manages material inventories to maintain improved safety posture and optimize the composition of the inventory.

Depleted Uranium Modernization is reestablishing and modernizing lapsed capabilities so NNSA can meet imminent weapons delivery mission requirements.

The Depleted Uranium Modernization program supports re-establishing a reliable supply of feedstock material, High Purity DU (HPDU) metal, before the current inventory is exhausted. The program is also maintaining and restarting various existing DU operations and DU-niobium alloy, commonly called binary, production to meet current and future weapon component needs. To produce new binary material, Y-12 is restarting the Vacuum Induction Melt (VIM) – Vacuum Arc Remelt (VAR) – VAR production process (VIM-VAR-VAR). The program is modernizing the wrought manufacturing and machining capabilities, which is needed for component manufacturing to increase capacity and reliability in existing aging facilities to meet mission deliverables.

The program is investing in key new technologies to modernize production and meet future demands. Direct Casting would improve the existing component manufacturing process by significantly reducing the risks of current equipment failure, reducing material waste, and improving process efficiency. The program is also pursuing other technologies to provide additional opportunities for material reuse and recycling to reduce mission risk, such as Electron Beam Cold Hearth Melting (CHM). These new technologies could improve the DU-niobium alloying process as well as the production of DU and binary components.

Lithium Modernization is modernizing and operating recently re-started capabilities so NNSA can meet imminent weapons delivery mission requirements. By operating recently re-established chemical purification processes and metal production processes, and dismantling and recycling lithium components, the program provides a reliable lithium material inventory able to meet yearly material requirements.

The program plans and executes additional recapitalization projects and risk reduction activities to ensure that the current lithium processing capability is sustained until the future enduring capability, the Lithium Processing Facility (LPF), is operational in the 2030s. These efforts provide the time and space needed to meet near-term material deliverables while the LPF is designed and constructed.

The LPF is a first of its kind facility for the Nuclear Security Enterprise, built on the former Biology complex site at Y-12. This facility will relocate lithium operations and processes currently in Buildings 9204-2, an 80-year-old facility that is the highest risk infrastructure at Y-12, and 9202 into a safe, reliable, and modern building. It will be designed with space for lithium processing equipment, shipping and receiving, in-process storage, and technical and administrative support.

The program also makes high-return investments in key new technology maturation efforts and process improvements that make lithium processing more efficient, safer for workers, and less impactful to surrounding infrastructure. In FY 2025, the Lithium Modernization program will continue to pursue these activities through cross cutting technology exploration with key partnerships at LANL, LLNL, and PNNL, as well as private industry. A secondary goal of these efforts is to build the enterprise's future Lithium material SMEs across design and production agencies.

Advanced Materials and Capabilities Modernization (formerly **Special Materials)** is developing and deploying a new modern production capability for new component technologies that will be used in future weapons. NNSA discontinued the legacy processes used to produce certain components due to safety concerns. These legacy materials will be replaced with new technologies that will utilize materials that meet the performance requirements and are less hazardous to use. Advanced Materials and Capabilities Modernization supports Y-12's plan to repurpose its existing Building 9225-03 into the Special Materials Facility, which will serve as the long-term manufacturing hub for Special Materials components, and to establish a near-term production capability at the Test and Demonstration Facility.

In FY 2025, the Advanced Materials and Capabilities Modernization program will continue to support technology maturation work to mature the Special Materials technologies to the next technology readiness milestones and will initiate equipment procurements for Building 9225-03 to meet imminent weapons delivery mission requirements.

Mission Delivery Modernization (formerly Secondary Stage Capability Modernization) is modernizing operations and facilities that affect multiple material programs. Due to the condition of Building 9995 (known as the Plant Lab), analytical chemistry operations and sampling suffer from unplanned outages. Modernization is required to increase reliability and capacity to meet increasing sample requirements from UPF and production increases across the plant. The program is also supporting the General Manufacturing capability in Building 9201-1, a Manhattan project era facility, which requires

modernization to support the machining of special material components, graphite, tooling, and other components to meet mission requirements. Finally, the program supports Assembly, Disassembly, Dismantlement, and Surveillance (ADDS) capability modernization in Building 9204-2E, which requires modernization to meet future capacity needs. The program is also pursuing opportunities to reduce risk to the supply chain needed to maintain the stockpile through the Critical Supplier Program.

Highlights of the FY 2025 Budget Request

- Continue activities that will allow NNSA to phase out mission dependency on Building 9212 by supporting the transition of enriched uranium capabilities into existing facilities and UPF and deactivating out-of-service systems in Building 9212. Activities include the following: Conclude pre-operational testing of the calciner in Building 9212 to process low-equity uranium solutions and begin operating the electrorefining capability in Building 9215 to purify uranium metal.
- Conclude pre-operational testing and transition the direct chip melt front loading furnace to production in Building 9215 and advance design of the direct chip melt bottom loading furnace.
- Begin work to reestablish a uranium oxide-to-metal conversion capability at Y-12.

- Maintain working inventory levels of enriched uranium to reduce safety and security risks in enduring facilities and optimize the material composition of the uranium inventory.
- Extend the operational life of Building 9215.
- Continue to implement a strategy to optimize limited space in enriched uranium facilities.
- Develop, sustain, and increase the reliability of uranium analytical and manufacturing capabilities to reduce risks.
- Reduce material inventory, deactivate systems, and process and disposition of legacy materials to phase out mission dependency on Building 9212.
- Establish a uranium oxide-to-metal conversion capability at a commercial vendor to bridge the capability gap. Install newly procured production equipment to mitigate risks associated with the aging material and component processes at Y-12.
- Continue startup and operational release of critical VIM-VAR-VAR and wrought depleted uranium capabilities to support current and future weapon systems.
- Execute depleted uranium foundry modernization projects supporting binary production (e.g., 2nd VAR, Nitric Acid Tank, 2nd Weld Box).
- Continue to accelerate depleted uranium technology development schedule for future insertion into production to reduce reliance on aging material and component processes, reduce material demands, and improve binary production efficiency. Technologies include Direct Cast, Cold Hearth Melting, and Additive Manufacturing.
- Invest in depleted uranium storage capabilities and material modeling to ensure the long-term availability of strategic materials.
- Produce and maintain the lithium material supply and manage the lithium supply and demand model.
- Maintain and operate reestablished lithium conversion and purification capabilities in support of near-term mission requirements.
- Maintain and recapitalize lithium processing equipment in Building 9204-2 to reduce the risk of single-point failures.
- Mature lithium technology alternatives to improve processing efficiencies in support of the Lithium Strategy.
- Install the Special Materials prototype production press at the Y-12 Test and Demonstration Facility and procure additional presses.
- Continue to mature Special Materials technologies to reach the next technology readiness level milestones required for production.
- Install Special Materials equipment at Y-12's Special Materials, 9225-03 Facility.
- Execute a graphite strategy through the General Manufacturing Modernization Program, maintain and update the 9201-1 Facility modernization Plan, and support production modernization of general manufacturing through the procurement of new equipment.
- Utilize the prioritized gap analysis to execute modernization required for Y-12 Assembly, Disassembly, Dismantlement and Surveillance capability.
- Continue the Extended Life Program work in Building 9995 and address urgent needs to increase capacity through modern equipment, designs for potential new facility and/or building upgrades.

FY 2026 – FY 2029 Key Milestones

- Receive startup authorization for the calciner in Building 9212 to process low-equity uranium solutions.
- Initiate work to fabricate and install equipment in Building 9215 to expand the chip processing capacity.
- Advance the direct electrolytic reduction technology, which, with the electrorefining process, will provide the capability to convert uranium oxide to purified metal at Y-12.
- Qualify the viability of casting enriched uranium parts using microwave technology, which is efficient and will improve the quality of the enriched uranium metal supply.
- Maintain Target Working Inventory, the minimum amount of enriched uranium needed for operations, within enduring facilities to enhance the safety of existing facilities that will be operational through the 2040s and beyond.
- Optimize quantity and quality of purified enriched uranium metal produced through the electrorefining process.
- Establish a DUF6 to HPDU conversion capability to provide a reliable source for HPDU to meet mission requirements.
- Execute mitigation activities to augment NNSA's supply of HPDU and push back the need-by date for an HPDU conversion capability.
- Install two Direct Cast VIM furnaces at Y-12 to meet additional demand.
- Install an additional annealing furnace and additional lathes, to meet critical near-term depleted uranium mission requirements.
- Achieve Technical Readiness Level (TRL)-7 (Full-scale, similar system demonstrated in relevant environment) for Cold Hearth Melting.
- Install an additional crusher/grinder to eliminate a critical equipment single point of failure in the lithium material stream.
- Begin activities in support of a future operational release plan to transition lithium operations to the LPF and reduce mission reliance on Building 9204-2.
- Re-establish a deuterium gas capability to ensure a supply of lithium deuteride past the 2030s.
- Begin construction of the LPF.
- Achieve Beneficial Occupancy in the Special Materials Facility at Y-12.
- Start-up engineered equipment at the Special Materials Facility at Y-12.
- Reach technology readiness milestones for Special Materials technologies and continue to reach the next technology readiness level milestones for new Special Materials technologies required for production.
- Install additional presses, as required, in support of the long-term capability at the Special Materials Facility.
- Begin producing Special Materials components to meet imminent weapons delivery milestones such as process prove-in and starting qualification.
- Execute facility upgrade strategy for Quality Modification, Building 9995 Plant Laboratory.
- Procure prioritized equipment and initiate and execute facility upgrade strategy for ADDS, Building 9204-2E.

FY 2023 Accomplishments

- Produced eleven production quality buttons of purified metal utilizing the Electrorefining Development Glovebox system.
- Executed phase I of a uranium oxide purification and conversion contract with a commercial vendor designed to bridge an upcoming capability gap and reduce risk to the uranium program.
- Demonstrated repeatability of microwave casting technology using UPF microwave casting furnaces prototype.
- Removed 10 pieces of out-of-service equipment in the enriched uranium production area to improve the flexibility and resiliency of operations.
- Deactivated 14 out-of-service systems to prepare for transitioning operations out of facilities, including Building 9212.
- Conducted an Analysis of Alternatives to determine most appropriate strategy for establish a DUF6 to HPDU capability.
- Completed delivery and characterization of a 95 Metric Ton procurement of U.S- origin HPDU.
- Completed a demonstration project to produce HPDU from Depleted Uranium oxides produced at Y-12 and from disposed Depleted Uranium projectiles from the U.S. Department of Defense.
- Conducted relevant analyses in support of the physics and engineering qualification for Direct Cast components, which is an important step in implementing the Bridging Strategy.
- Completed engineering assessments of Direct Cast binary, accelerating technology development for Direct Cast components.

- Advanced the Cold Hearth Electron Beam Melting Cold Hearth Melting technology readiness level for future binary recycling and alloying.
- Provided five binary ingots to Stockpile Programs with a prototype VAR to support manufacturability, certification, and tests needed to inform Phase 6 weapons development.
- Completed installation and site acceptance testing of Direct Cast furnace to support the advancement of technology and manufacturing readiness levels.
- Developed Depleted Uranium Capability and Facility Modernization Plans to address necessary equipment and building upgrades to keep Y-12's aging facilities operational.
- Completed restart activities in support of the Production VAR.
- Achieved CD-3A for the Lithium Processing Facility (long-lead procurements and site preparation).
- Completed TRL-7 integrated threshold testing for Homogenization technology. Demolished old, corroded pan dryer, and received new pan dryer to reduce equipment failure risk in Building 9204-2.
- Installed a second line of chemical purification, representing a 100% capacity increase.
- Updated and validated the Lithium supply and demand model to inform future investments and ensure an adequate lithium supply.
- Updated Lithium Infrastructure Implementation Plan for recapitalization and risk reduction for the aging Building 9204-2.
- Developed technology to potentially increase press capacity by 100% through a less expensive die design change.
- Selected production prototype press vendor and completed design on schedule to meet mission requirements.
- Developed ADDS gap analysis initial investment list.
- Y-12 hosted first analytical chemistry summit at Y-12 to discuss gaps and to provide recommendations to improve Quality Modernization scope.

Secondary Capability Modernization
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Secondary Capability Modernization $536,363,000	**Secondary Capability Modernization $755,353,000**	**Secondary Capability Modernization +$218,990,000**

• Continued activities that will allow NNSA to phase out mission dependency on Building 9212 by supporting the transition of enriched uranium capabilities into existing and new-build facilities.
• Completed pre-operational testing for the calciner in Building 9212 to process low-equity uranium solutions and begin operational release of the electrorefining capability in Building 9215 to purify uranium metal.
• Continued development and execution of direct chip melt bottom-loading furnace to process machine turnings.
• Continued efforts to reestablish a uranium oxide-to-metal conversion capability and optimize metal supply.
• Continued material optimization efforts to reduce safety and security risks.
• Improved existing manufacturing capabilities and optimize floor space for flexible production capacity in enriched uranium facilities.
• Extended the operational life of enduring enriched uranium facilities.
• Continued purified metal production.
• Deactivated systems and processing and disposition of legacy materials to phase out mission dependency on Building 9212.
• Improved HEU feedstock quality before and during the transition to the new and enduring facilities.
	• Continue activities that will allow NNSA to phase out mission dependency on Building 9212 by supporting the transition of enriched uranium capabilities into existing facilities and UPF and deactivating out-of-service systems in Building 9212. Activities include the following:
	  ○ Conclude pre-operational testing and transition the calciner in Building 9212 to process low-equity uranium solutions and begin operating the electrorefining capability in Building 9215 to purify uranium metal.
	  ○ Conclude pre-operational testing and transition the direct chip melt front loading furnace to production in Building 9215 and advance design of the direct chip melt bottom loading furnace.
	  ○ Reestablish a uranium oxide-to-metal conversion capability.
	• Maintain working inventory levels of enriched uranium to reduce safety and security risks in enduring facilities and optimize the material composition of the uranium inventory.
	• Continue to implement a strategy to optimize limited space in enriched uranium facilities.
	• Develop, sustain, and increase the reliability of uranium analytical and manufacturing capabilities to reduce risks.
	• Extend the operational life of Building 9215.
	• Reduce material inventory, deactivate systems, and process and disposition of legacy materials to phase out mission dependency on Building 9212.
		• Invest in emerging risk areas at Y-12, including the Plant Lab, Assembly Disassembly facility, and General Manufacturing operations, to prevent failures or bottlenecks.
		• Support critical depleted uranium modernization projects including Feedstock Supply & Procurement, Binary Production.
		• Support work for depleted uranium and binary component production beyond the 2030s.
		• Address existing lithium infrastructure risk and ensure reliable capabilities are available to support the stockpile.
		• Support new capabilities to produce future weapon system components.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
• Downselected a path forward to establish a reliable supply of HPDU metal feedstock to meet mission requirements. • Produced binary ingots and test hardware and components with the newly restarted VIM-VAR-VAR and wrought capabilities to support current and future weapon systems. • Developed and deploy new technologies further, such as Direct Cast and Cold Hearth Melting, to improve alloying and component production efficiencies. • Established more DU storage capabilities and conduct material modeling with new technology assumptions to ensure the long-term availability of strategic materials. • Installed newly procured equipment as part of the DU bridging strategy to mitigate risks associated with the aging material and component processes at Y-12. • Planned activities for the Construction Acquisition Task Force for DU. • Planned rapid response processes for most likely operational failure modes. • Processed LiH and LiD in support of deliverables. • Completed procurement of an additional evaporator (Bird Bath). • Began design of the Backup Crusher/Grinder project. • Planned and prioritized activities in the Lithium Process Equipment Relocation risk reduction activity. • Planned rapid response processes for most likely operational failure modes.	• Establish a uranium oxide-to-metal conversion capability at a commercial vendor to bridge the capability gap. • Install newly procured production equipment to mitigate risks associated with the aging material and component processes at Y-12. • Continue startup and operational release of critical VIM-VAR-VAR and wrought depleted uranium capabilities to support current and future weapon systems. • Execute depleted uranium foundry modernization projects supporting binary production (e.g., 2nd VAR, Nitric Acid Tank, 2nd Weld Box). • Continue to accelerate depleted uranium technology development schedule for future insertion into production to reduce reliance on aging material and component processes, reduce material demands, and improve binary production efficiency. Technologies include Direct Cast, Cold Hearth Melting, and Additive Manufacturing. • Invest in depleted uranium storage capabilities and material modeling to ensure the long-term availability of strategic materials. • Manage lithium material feedstock to optimize full-recycle supply to operations. • Maintain and operate reestablished lithium conversion and purification capabilities in support of near-term mission requirements. • Maintain and recapitalize lithium processing equipment in Building 9204-2 to bolster reliability of decades-old equipment and reduce the risk of single-point failures. • Mature lithium technology alternatives to improve processing efficiencies thus reducing wear and tear on equipment and mitigating the risk in	

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
	transitioning from Building 9204-2 to the future Lithium Processing Facility. • Install the Special Materials prototype production press at the Y-12 Test and Demonstration Facility and procure additional presses. • Continue to mature Special Materials technologies to reach the next technology readiness level milestones required for production. • Install Special Materials equipment at Y-12's Special Materials, 9225-03 Facility. • Execute a graphite strategy through the General Manufacturing Modernization Program, maintain and update the 9201-1 Facility modernization Plan, and support production modernization of general manufacturing through the procurement of new equipment. • Utilize the prioritized gap analysis to execute modernization required for Y-12 Assembly, Disassembly, Dismantlement and Surveillance capability. • Continue the Extended Life Program work in Building 9995 and address urgent needs to increase capacity through modern equipment, designs for potential new facility and/or building upgrades.	

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
18-D-690 Lithium Processing Facility, Y-12 ***$216,886,000***	***18-D-690 Lithium Processing Facility, Y-12*** ***$260,000,000***	***18-D-690 Lithium Processing Facility, Y-12*** ***+$43,114,000***
• Achieved CD-3A to authorize long lead procurements and site prep. • Continued to mature process design work. • Continued to mature facility design work. • Begin fabrication of TRL 7 prototype for homogenization (HMG) technology, a new technology for LPF that will improve material quality and processing efficiency.	• Continue site preparation and begin some long-lead procurements. • Develop and prepare CD-2/3 package. • Continue work on East End Substation in support of the 2028 need date.	• Continue site preparation and long-lead procurements and start construction activities.
06-D-141 Uranium Processing Facility, Y-12 ***$362,000,000***	***06-D-141 Uranium Processing Facility, Y-12*** ***$800,000,000***	***06-D-141 Uranium Processing Facility, Y-12*** ***+$438,000,000***
• Executed contracts for the specialized equipment and bulk commodities needed for ongoing nuclear facility construction, leases, and incremental commitments to previously awarded contracts to support progress on UPF. • Continued construction for the Main Process Building, Salvage and Accountability Building, and Process Support Facilities. • Began startup testing and commissioning activities on the Main Process Building, Salvage and Accountability Building, and Process Support Facilities.	• Execute construction, startup testing, and commissioning activities for the Main Process Building, Salvage and Accountability Building, and Process Support Facility.	• Provides additional funds to continue construction due to increased cost and schedule estimates.

Description

Tritium Sustainment and Modernization operates the national capability for producing tritium. The program will irradiate between 1,792 and 1,920 tritium-producing burnable absorber rods (TPBARs) ensuring an inventory of tritium while maintaining a reasonably flexible supply chain capability and capacity to meet national security requirements. NNSA produces tritium by irradiating TPBARs in two Tennessee Valley Authority (TVA) reactors during normal 18-month operating cycles. Produced tritium is extracted from the TPBARs at the Tritium Extraction Facility (TEF) at SRS. Tritium inventory is maintained to meet national security requirements, including support for limited-life component exchanges of tritium reservoirs that are deployed in the stockpile. The program establishes tritium production schedules, based on detailed computational models and annual tritium reconciliations, that maintain required tritium inventories, including reserve quantities. Production planning takes into consideration the material that is constantly being recovered and recycled from deployed reservoirs, including those from weapon dismantlement. The program also supports tritium science and technology initiatives to maintain a reliable tritium supply chain.

Domestic Uranium Enrichment is responsible for ensuring a reliable supply of enriched uranium to support U.S. national security needs. Since the closure of the Paducah Gaseous Diffusion Plant in 2013, the United States has lacked the capability to produce enriched uranium free of peaceful use obligations (i.e., unobligated). DOE/NNSA requires unobligated enriched uranium to fuel reactors that produce tritium for nuclear weapons and to power the nuclear Navy. The DUE program is implementing a three-pronged strategy to supply current enriched uranium needs and re-establish a supply of enriched uranium to meet long-term needs. First, NNSA seeks to ensure and extend availability of its unobligated LEU fuel supply through the early 2040s by down-blending excess HEU. Second, DUE is preserving and advancing uranium enrichment expertise and technology to meet current and future U.S. Government needs. Third, DUE is re-establishing a long-term supply of enriched uranium to meet future U.S. national security requirements

The Tritium Finishing Facility (TFF) project at the Savannah River Site will recapitalize tritium infrastructure that supports scheduled shipments of gas transfer systems to the Department of Defense. To maintain the nuclear security enterprise's capacity to execute existing construction projects and to ensure design resources and critical personnel are available to the SRPPF project, no funding is requested for TFF in FY 2025. FY 2023 carryover will be used to execute the site prep subproject, complete 30% design for the process building, and 60% design for classified processes. NNSA will monitor the condition of existing infrastructure and invest, where necessary, to reduce risk and avoid disruption of Department of Defense schedules.

Highlights of the FY 2025 Budget Request

- Maintain a purified tritium supply and enable the delivery of tritium for national security needs.
- Commence irradiation of 1,792 to 1,920 TPBARs in Watts Bar Nuclear Reactor Unit 1 (WBN1) Cycle 20 and in Watts Bar Nuclear Reactor Unit 2 (WBN2) Cycle 7.
- Execute additional component procurements and TPBAR assemblies to satisfy assured production requirements.
- Conduct six extractions at the Tritium Extraction Facility (TEF).
- Invest in opportunities with the potential for significant cost reductions or improvements to maintain the reliability, flexibility, and responsiveness of the tritium supply chain.
- Disposition helium-3 byproduct for U.S. Government needs.
- Refurbish or replace tritium processing equipment consistent with preventative maintenance plan, i.e. system sustainment plan (PSSP).
- Execute research and development (R&D) activities supporting extraction, recycle and recovery, risk mitigation activities, and technology maturation efforts.
- Complete the Hot and Cold Nitrogen and Thermal Cycling Absorption Process maintenance and repair projects during calendar year 2025.
- Continue down-blending of HEU from existing excess uranium inventory to provide LEU fuel for tritium production.
- Continue to seek and secure additional sources of unobligated enriched uranium to fuel tritium production.
- Preserve and advance uranium enrichment expertise and technology for current and future U.S. national security needs through the Domestic Uranium Enrichment Centrifuge Experiment (DUECE) centrifuge development program.

- Complete options study for DUE pilot plant and begin conceptual and preliminary design activities.
- Continue DUECE procurement activities for centrifuge machines in engineering scale demonstration cascade DCAS2 facility, as well as equipment purchases related to manufacturing maturation.
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- Initiate prototype development of unobligated balance of plant equipment for enrichment facilities.
- Finalize the DUECE small centrifuge Generation 1 machine design to be tested in Demonstration Cascade 2 (DCAS2).

FY 2026 – FY 2029 Key Milestones

- Maintain a purified tritium supply and enable the delivery of tritium for national security needs.
- Continue to invest in measures to increase confidence in the tritium supply chain.
- Maintain tritium production in two reactors operating over 18-month reactor cycles sufficient to meet tritium inventory requirements.
- Implement use of enhanced capacity transportation casks.
- Disposition helium-3 byproduct for U.S. Government needs.
- Support Weapons Engineering Tritium Facility (WETF) de-inventory mission at LANL.
- Execute process system sustainment plan (PSSP) to refurbish or replace tritium processing equipment.
- Complete down-blending campaign to provide additional LEU fuel for tritium production.
- Complete design and begin construction of a DUE Pilot Plant.
- Begin operating engineering scale DCAS 2 testbed at Oak Ridge National Laboratory.
- Manage TFF risks and plan for restart of the TFF project.

FY 2023 Accomplishments

- Completed irradiation of 1,792 TPBARs in WBN1, Cycle 18 and commenced irradiation of 1,792 TPBARs in Cycle 19.
- Completed eleven shipments of TPBARs to TEF.
- Completed six extractions of 300 TPBARs per extraction at the TEF.
- Submitted (via TVA) a License Amendment Request to the Nuclear Regulatory Commission to increase allowable TPBARs in each Watts Bar reactor to greater than 1,792.
- Initiated, or continued, Tritium Science Program studies at multiple DOE laboratories.
- Recovered and recycled tritium to meet NNSA requirements and managed helium-3 byproduct to not impact Gas Transfer System mission.
- Completed final design for the thermal cycling absorption process (TCAP) Column A isotopic separation equipment in preparation for calendar year 2025 installation.
- Completed Critical Decision-2/3 for the TFF project site preparation and warehouse subproject.
- Performed single-machine testing of the first DUECE centrifuge design that could meet NNSA production and cost requirements.
- Finished construction of DCAS 2 facility at ORNL with beneficial occupancy expected at the beginning of FY 2024.
- Met delivery milestones for HEU down-blending to extend LEU for tritium production need date.

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Tritium and Domestic Uranium Enrichment $506,649,000	**Tritium and Domestic Uranium Enrichment $661,738,000**	**Tritium and Domestic Uranium Enrichment +$155,089,000**
• Completed irradiation of 1,792 TPBARs in WBN1 Cycle 18 and continued irradiation of 1,104 TPBARs in WBN2 Cycle 5. • Completed fabrication of 1,792 TPBARs for WBN1 Cycle 19 and 1,680 TPBARs for WBN2 Cycle 6. • Proceeded with implementation of tritium production assurance, including advanced mitigation planning for extended reactor outages. • Commenced WBN1 Cycle 19 TPBAR Irradiation. • Executed additional component procurements and TPBAR assemblies to satisfy increased production requirements. • Conducted eleven TPBAR shipments to the TEF. Shipped low-level hardware waste to NNSS. • Conducted six extractions at the Tritium Extraction Facility (TEF), beginning the ramp-up to full operations mode. • Maintained a purified tritium supply and enabled delivery of tritium for national security needs. • Dispositioned helium-3 byproduct for U.S. Government needs. • Executed process system sustainment plan (PSSP) to refurbish or replace tritium processing equipment. • Executed research and development (R&D) activities supporting extraction, recycle and recovery, risk mitigation activities, and technology maturation efforts. • Continued long-lead procurements and design activities for the six HCN/TCAP projects.	• Commence irradiation of 1,792 to 1,920 TPBARs in WBN1 Cycle 20 and in WBN2 Cycle 7. • Execute additional component procurements and TPBAR assemblies to satisfy increased production requirements. • Conduct six extractions at the TEF. • Invest in opportunities with the potential for significant cost reduction or improvements to maintain the reliability, flexibility, and responsiveness of the tritium supply chain. • Maintain a purified tritium supply and enable the delivery of tritium for national security needs. • Disposition of helium-3 byproduct for U.S. Government needs. • Refurbish or replace tritium processing equipment consistent with preventative maintenance plan, i.e. system sustainment plan (PSSP). • Execute research and development (R&D) activities supporting extraction, recycle and recovery, risk mitigation activities, and technology maturation efforts. • Complete the Hot and Cold Nitrogen and Thermal Cycling Absorption Process maintenance and repair projects during calendar year 2025. • Continue down-blending campaign to extend the need date for LEU fuel for tritium production. • Continue to seek and secure additional sources of unobligated enriched uranium to support the tritium production mission.	• DUE increase reflects initiation of design for an enrichment technology pilot plant. • DUE increase also reflects increased investment in enrichment technology supply chain development. • Slight increase in the Tritium Modernization Program request reflects investments to increase confidence in the overall tritium supply chain.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
• Continued down-blending campaign to extend the need date for LEU fuel for tritium production. • Continued to seek and secure additional sources of unobligated enriched uranium to support the tritium production mission. • Continued to preserve and advance uranium enrichment expertise and technology to meet current and future U.S. Government needs. • Completed DUECE Demonstration Cascade 2 (DCAS2) Minor Construction project at ORNL.	• Continue to preserve and advance uranium enrichment expertise and technology to meet current and future U.S. Government needs. • Complete options study for domestic uranium enrichment pilot plant. • Begin planning and conceptual design activities for an enrichment technology pilot plant. • Continue enrichment technology supply chain development.	
18-D-650 Tritium Finishing Facility, SRNS ***$73,300,000***	***18-D-650 Tritium Finishing Facility, SRNS*** ***$0***	***18-D-650 Tritium Finishing Facility, SRNS*** ***-$73,300,000***
• Managed execution risks and maintained progress on site preparation and TFF design.	• Carryover will be used to execute the site prep subproject, complete 30% design for the process building, and 60% design for classified processes.	• Decrease reflects reprioritization of scarce labor resources at the SRS to the Savannah River Plutonium Processing Facility, in recognition of the site's finite capacity to execute construction while maintaining a focus on finishing projects currently under construction.

Production Modernization
Non-Nuclear Capability Modernization

Description

The Non-Nuclear Capability Modernization (NNCM) program executes modernization projects to ensure the enduring availability of non-nuclear capabilities for multiple weapon systems. The NNCM program is responsible for all non-nuclear components external to the primary or secondary stage in the nuclear explosive package (NEP). Non-nuclear components provide critical warhead functions using a wide range of components, including radiation-hardened microelectronics, neutron generators, gas transfer systems, power sources, electrical assemblies, cables, connectors, structural elements, pads/cushions, and a multitude of other parts that are incorporated into the systems that support or weaponize the NEP. The NNCM program modernizes the extensive suite of infrastructure and equipment required to support the non-nuclear component lifecycle inclusive of design, development, qualification, production, and surveillance. These capabilities ensure that components can survive environments encountered throughout the stockpile to the target sequence and over the life of the weapon.

The NNCM program also executes long-term planning and OPC activities to modernize production capabilities for non-nuclear components through line item projects, including the Power Sources Capability (PSC), Product Realization Infrastructure for Stockpile Modernization (PRISM), and Microelectronic Components Capability (MC2) projects.

Highlights of the FY 2025 Budget Request

- Expand KCNSC manufacturing capacity through equipment procurements to meet program of record (PoR) production requirements in support of the Kansas City Non-Nuclear Expansion Transformation (KC NExT) portfolio.
- Procure fabrication tools and equipment to enable continued manufacturing of warhead strategic radiation- hardened (WSRH) microelectronics at the MESA complex for the nuclear weapon stockpile.
- Refurbish SNL's ACRR radiation testing facility, which is critical for the qualification and surveillance testing of components for all weapons systems, to bridge the capability until the CREST project is complete.
- Initiate phase 2 refurbishment of SNL's SATURN X-Ray effects testing capabilities, which are critical to ensuring that non-nuclear components can survive the complex and extreme environments of the Stockpile to Target Sequence.
- Continue support for the Electronic Parts Program to reduce risk of using COTS parts in weapons modernization programs.
- Procure production tools and equipment to enable the manufacturing of Neutron Generators for the nuclear weapons stockpile.
- Develop thermal spray production capability needed to meet the requirements of modernization systems.
- Continue strategic sourcing mitigations targeting distressed commodities and vendors and implement commodity strategies that reduce overall supply chain risks.
- Continue implementation of an enterprise-wide effort for early identification of at-risk materials and development of solutions to mitigate supply chain interruptions.
- Continue programmatic equipment acquisition and maintenance for Accelerators (including SATURN and HERMES), Major Environmental Test Facilities (METF), and Electrical Sciences at SNL.

FY 2026 – FY 2029 Key Milestones

- Complete equipment outfitting for KCNSC short-term expansion plan.
- Achieve CD-2/3 for Power Sources Capability.
- Complete equipment outfitting for first phases of KC NExT.

FY 2023 Accomplishments

- Supported KCNSC manufacturing capacity expansion to meet PoR production requirements.
- Procured fabrication tools and equipment to enable continued manufacturing of warhead strategic radiation-hardened (WSRH) microelectronics at the MESA complex for the nuclear weapon stockpile.
- Continued initial refurbishment of SNL's SATURN X-Ray effects testing capabilities.
- Implemented a front-end, assurance system model for electronic parts to reduce the risk of inserting COTS in weapons modernization programs.
- Initiated thermal spray production capability needed for future systems.

- Installed a new wireless intrusion detection system (WIDS) in KCNSC manufacturing spaces and initiated Smart Factory digital engineering efforts to dynamically manage constraints on the factory floor and increase production efficiencies.

Non-Nuclear Capability Modernization
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Non-Nuclear Capability Modernization $123,084,000	**Non-Nuclear Capability Modernization $141,300,000**	**Non-Nuclear Capability Modernization +$18,216,000**
• Expanded manufacturing capability at KCNSC to address increased capacity needs for PoR requirements. • Funded OPCs for PSC and MC2 projects. • Development of thermal spray production capability for modernization programs. • Modernized environmental testing, power source development, and warhead strategic radiation-hardened microelectronics capabilities at SNL. • Funded the inclusion of Accelerator, METF, and Electrical Sciences programmatic equipment maintenance and procurement requirements at SNL. • Procured equipment for the front-end assurance system for electronic COTS parts. • Supported modernization efforts for the radiation testing facility at SNL (ACRR). • Implemented the Tester Transformation Initiative to establish a means for pre-qualifying testers to a common DA/PA platform. • Procured production tools and equipment to enable continued manufacturing of Neutron Generators for the nuclear weapons stockpile. • Implemented an enterprise-wide approach to identify at-risk materials and mitigate supply chain interruptions. • Replaced power sources programmatic equipment beyond service life for use in Agile Facility and PSC.	• Continue expanding manufacturing capability at KCNSC through equipment procurements to address increased capacity needs for PoR requirements. • Continue development of thermal spray production capability for modernization programs. • Continue to modernize environmental testing and warhead strategic radiation-hardened microelectronics capabilities at SNL. • Continue implementation of a front-end assurance system model for COTS parts to reduce risk in weapons modernization programs. • Continue support for modernization efforts for radiation testing facility at SNL (ACRR). • Procure production tools and equipment to enable continued manufacturing of Neutron Generators for the nuclear weapons stockpile. • Continue Accelerator, METF, and Electrical Sciences programmatic equipment maintenance and procurement at SNL. • Continue enterprise-wide approach to identify at-risk materials and mitigate supply chain interruptions.	• Increase will fund support for the Kansas City expansion efforts. • Increase for modernization of environmental testing capabilities at Sandia National Laboratories, critical to ensuring non-nuclear components can survive Stockpile to Target Sequence environments.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
• Continued the Pantex Modernization Study to develop a plan for modernizing the Pantex Plant. • Undertook studies of process improvements to reduce manufacturing costs across the enterprise.		
22-D-513, Power Sources Capability, SNL ***$0***	***22-D-513, Power Sources Capability, SNL*** ***$50,000,000***	***22-D-513, Power Sources Capability, SNL*** ***+$50,000,000***
• Project zeroed in FY 2023 to incorporate value engineering recommendations from FY 2022.	• Achieve CD-2/3 in Q3 FY 2025.	• Increase reflects new execution strategy for the project based on the completion of preliminary design and supports the initiation of site preparation and long-lead procurements.

Production Modernization
Capability Based Investments

Description

The Capability Based Investments (CBI) program executes modernization projects to restore or enhance core enterprise capabilities through the recapitalization of high-risk of failure tests, measurements, and production equipment. CBI addresses enduring, multi-program requirements through discrete, short-duration projects. These investments modernize scientific and manufacturing capabilities that have degraded due to aging, broken, or outdated equipment and supporting systems. CBI activities primarily include capital equipment purchases and minor construction projects that enable the installation and use of the equipment and associated capabilities. These investments address needs beyond any single facility, campaign, or weapon system and are essential to achieving DP mission objectives. The CBI portfolio provides agility and reduces programmatic risks to mission across the nuclear security enterprise and ensures needed capabilities are available for stockpile stewardship, sustainment, and modernization.

Highlights of the FY 2025 Budget Request

- Table I shows the planned CBI projects to be executed with FY 2025 funding based on the status of enterprise infrastructure as of February 2024. This plan may need to be updated before the FY 2025 execution year to respond to changing infrastructure conditions and requirements.

FY 2026 – FY 2029 Key Milestones

- Meet current commitments that enable W80-4, W87-1, and W-93 modernization programs.
- Complete equipment replacement and refurb projects at LANL that support the roadmap to 30 pits per year.
- Modernize sub-critical testing capabilities used for stockpile assessment, NEP design, and weapon certification activities to support planned sub-crit schedules.

FY 2023 Accomplishments

- Replaced 30 plus year old Trolley Controls in PF-4, LANL.
- Completed Hydrotest Photon Doppler Velocimetry (PDV) Systems Buildout project, LLNL.
- Completed CBI scope supporting KC plant equipment recapitalization.
- Completed the Pulsed High Power Calibration System project, SNL.
- Completed Mechanics of Materials (MOMs) Equipment Relocation project, LLNL.
- Completed Computed Tomography (CT) Part Positioner #2 project, Y12.
- Completed Paint Booth recapitalization project, PX.
- Completed the High Explosive Mission Infrastructure Upgrade project, NNSS.

Capability Based Investments
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Capability Based Investments $154,220,000	**Capability Based Investments $153,244,000**	**Capability Based Investments -$976,000**
• CBI provided targeted, strategic investments for life-extension and modernization of enduring requirements needed to sustain Defense Programs' capabilities.	• Table I contains the current FY 2025 project plan as of January 2024. CBI project funds are allocated in accordance with planned priorities but retain the flexibility to adjust efforts to address unforeseen programmatic equipment failures and emerging risks.	• No significant change.

Table I

National Nuclear Security Administration Capability Based Investments Planned FY 2025 Recapitalization Projects - As of January 2024		
Site	**Project Name**	**FY 2025 Allocation ($K)**
KCNSC	Production Development Laboratory Modernization	1,200
	Special Application Machining Modernization	2,000
	Gas Transfer Systems Production Modernization	500
	Rubber & Plastics Modernization	800
	Analytical Laboratory Modernization	1,000
	Assembly and Electrical Fabrication Modernization	2,500
Subtotal, Kansas City National Security Campus		**8,000**
LLNL	Applied Material Engineering (AME) Consolidation	5,183
	Detonation and Dynamic Diagnostic Deployment Portfolio	1,500
	LEP Equipment Capabilities Replacement Portfolio	3,407
	STS Environmental Capabilities Portfolio	1,483
	Static and Dynamic Enhanced Radiography Portfolio	2,000
	Stockpile & AAR Equipment Recapitalization	7,500
	NEP Material Science and Engineering Characterization	3,000
	Pulsed Power and Energy Conversion Equipment to Support Stockpile Testing	3,000
	Stockpile Assembly/Disassembly Equipment and Tooling Recapitalization	3,461
Subtotal, Lawrence Livermore National Laboratory		**30,534**
LANL	PF-4 Trolley Bus Bar Second Section Installation and D&D	4,430
	DARHT Axis 1 Component Replacement	3,500
	NCERC PLANET Upgrade	1,600
	LANSCE Proton Storage Ring Diagnostic	2,000
	HE&E Molding Press 09-0032	1,200
	Sigma Hot Press Facility Modifications	4,000
Subtotal, Los Alamos National Laboratory		**16,730**
NNSS	ECSE/NDSE Mission Enabling Equipment	2,000
	U1a Complex Mission Infrastructure	2,500
	NNSS Mobile Testing Capabilities	4,200
	NLV Capability Recap and Capability Mobilization	2,500
	HXR Beamline Capabilities Upgrade	2,000
Subtotal, Nevada National Security Site		**13,200**
PNNL	Plutonium Metallurgy and Processing Science (PuMPS) capability upgrade	1,000
	Non-destructive evaluation capability enhancement	700
Subtotal, Pacific Northwest National Laboratory		**1,700**

Site	Project Name	FY 2025 Allocation ($K)
PX	Metrology Capabilities Recapitalization (Leak Calibration, Volume Determination, High Pressure)	4,000
	LINAC Manipulator - 12-84-1	4,200
Subtotal, Pantex Plant		**8,200**
SNL	PSL Equipment Upgrades	798
	TTR Field Radar Recapitalization	18,176
	METF Equip Replacements & Upgrades	5,596
	LAMP HB Equipment Upgrades	2,250
Subtotal, Sandia National Laboratories		**26,820**
SRS	Mass Spectrometer Replacements	5,500
	Replace Environmental Chambers 2 & 3	5,000
Subtotal, Savannah River Site		**10,500**
Y-12	Leak Tank 3	4,250
	Life Cert Oven Manifolds (LCOM)	5,500
	Leak Tank 2	4,250
Subtotal, Y-12 National Security Complex		**14,000**
HQ	Program Mgt, Planning, and Strategic Reserves	18,427
	Corporate Reserves	4,597
Grand Total, Capability Based Investments		**153,244**

Production Modernization
Warhead Assembly Modernization

Description
The Warhead Assembly Modernization (WAM) program modernizes the capabilities needed to execute warhead assembly/disassembly operations at the Pantex Plant for weapons modernization, surveillance, and dismantlement programs. The WAM program is responsible for modernization activities supporting multiple weapon programs. WAM identifies and implements cross cutting enhancements that provide benefit to all weapon operations executed at Pantex to ensure future mission demand can be achieved.

Warhead Assembly Modernization activities include the following:
1. Develop and implement production modernization strategies to increase capacity and resiliency for weapon assembly and disassembly.
2. Implement storage solutions for accelerated delivery of non-nuclear components.
3. Implement new processes and technologies that increase efficiency in weapon assembly and disassembly operations.
4. Provide equipment and infrastructure to enable new technology insertion.
5. Modernize critical equipment and capabilities that enable weapon assembly operations.
6. Execute planning and OPC activities for future major infrastructure projects supporting weapon assembly operations.

Highlights of the FY 2025 Budget Request
- Implement physical and equipment solutions to address storage deficiencies and support increased build-ahead lead times for weapon modernization components.
- Modernize process equipment to expand capability and capacity for warhead assembly operations.
- Develop conceptual plans and path forward for a modular approach to address the Material Staging Facility mission need and next generation assembly/disassembly mission.
- Remove legacy lightning protection catenary poles to significantly increase site operations availability.

FY 2026 – FY 2029 Key Milestones
- Implement process and tooling modernization to support Pantex Safety Basis Redesign initiatives.
- Complete studies of process enhancements to increase weapon assembly & disassembly capacity.
- Modernize process equipment to expand capability and capacity for warhead assembly operations.
- Execute planning and OPC activities for Material Staging Facility, Future Weapons Assembly and Disassembly Facility and High Explosives Component Assembly Facility.

FY 2023 Accomplishments
- Warhead Assembly Modernization is a new budget line beginning in FY 2025**.**

Warhead Assembly Modernization
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Warhead Assembly Modernization $0	**Warhead Assembly Modernization $34,000,000**	**Warhead Assembly Modernization +$34,000,000**
• WAM did not exist in FY 2023.	• Initiate conceptual design for Material Staging Facility. • Conduct early planning activities, pre-conceptual design, and document preparation in support of Future Weapons Assembly & Disassembly Facility. • Removal of legacy lightning protection system catenary poles to increase site operational availability. • Procure and install new nickel-plating equipment to support weapon modernization programs. • Procure new environmentally controlled storage for production tooling.	• WAM is a new program in FY 2025.

Capital Equipment Summary ($K)

	Total	Prior Years	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 vs FY 2023 ($)
Capital Equipment (> $500K)						
Total Non-MIE Capital Equipment (TEC <$10M)	N/A	N/A	312,706	359,070	355,542	+42,836
Basement Radiography Upgrades, LANL	23,087	13,599	6,777	0	2,711	-4,066
CaCl2 "Salt Preparation", LANL	10,239	6,031	0	0	4,208	+4,208
CNC Lathe (90%), LANL	19,972	6,947	6,414	0	6,611	+197
Coordinate Measurement Machine (CMM) #2, LANL	47,487	42,952	3,761	0	774	-2,987
Drill and Press D&D and Replacement, LANL	31,671	290	0	0	0	0
Electrorefining Line MC&A GB, LANL	22,888	2,532	0	2,000	18,356	18,356
Final Machining #2 (Previously T-Base #1 Replacement), LANL	41,226	29,435	3,503	5,000	3,288	-215
Foundry Immersion Density, LANL	12,467	8,907			3,560	
Foundry Upgrades Parts Staging (Previously Foundry Upgrades Phase 3), LANL	26,607	8,285	15,857	0	2,465	-13,392
Heat Treat (90%), LANL	21,903	2,807	0	0	19,096	19,096
Hot Inspection (Dimensional Inspection Box) (Previously Hot Inspection Phase 2), LANL	21,630	10,969	0	0	10,661	10,661
Immersion Density, LANL	25,958	15,044	6,548	0	4,366	-2,182
Load Frame Installation, LANL	26,338	4,593	15,097	0	6,648	-8,449
Lujan Scattering Center Capability - Multiple Simultaneous Neutron Measurements, LANL	10,000	0	0	0	0	0
Machining Parts Staging #1 (Previously Machining (Parts Staging)), LANL	18,163	10,160	8,003	0	0	-8,003
Machining Parts Staging #2, LANL	20,694	2,735	0	17,959	0	0
Manufacturing Modernization Project (MMP), LANL	32,768	26,095	6,673	0	0	-6,673
Metal Recovery System, LANL	27,000	0	0	0	0	0
Microscopy Upgrades Project (MUP) (Previously Microprobe - TA-55), LANL	22,467	14,503	7,964	0	0	-7,964
MRR Open Front Hood Install, LANL	16,398	0	350	0	0	-350
Subassembly Installation, LANL	19,619	2,087	0	9,354	8,178	8,178
TRU Waste Glovebox Project, LANL	24,224	12,656	2,445	0	9,123	+6,678
Turnings Consolidation glovebox (Previously Install new turnings consolidation glovebox), LANL	24,037	519	0	2,500	21,018	21,018
10kg Firing Tank for HESF, LLNL	12,000	0	0	0	0	0
DAF End of Life equipment replacement, LLNL	19,594	0	0	0	0	0
DAF Pit Certification support gloveboxes, LLNL	24,703	0	0	0	0	0
DAF pit residue processing gloveboxes, LLNL	24,755	0	0	0	0	0
DAF SCE assembly equipment, LLNL	21,843	0	0	0	0	0
DAF SCE part fabrication equipment, LLNL	16,000	0	0	0	0	0
High Volume Production Special Equipment Installation, LLNL	10,438	0	0	0	0	0
DUECE HPC Capability, ORNL	20,000	0	20,000	0	0	-20,000

	Total	Prior Years	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 vs FY 2023 ($)
Capital Equipment (> $500K)						
Depleted Uranium Hexafluoride (DUF6) to High Purity Depleted Uranium (HPDU) Conversion Project (previously DUF6 to DUF4 Conversion Project/Line), PPPO	123,780	37,780	30,000	23,000	23,000	-7,000
Diffusion Furnace Replacements (Qty 5), SNL	19,740	0	0	0	0	0
Flexible Production Stepper (previously I-line Multiple Wafer Size Stepper (ASML1 Replacement)), SNL	13,680	0	0	0	0	0
FSI-Tel Track (ASML1), SNL	10,700	0	10,700	0	0	-10,700
FSI Track Replacement (3 of 4) (previously FSI-TEL Track (ASML5)), SNL	12,120	0	0	0	0	0
FSI Track Replacement (4 of 4), SNL	10,910	0	0	0	0	0
QU3992 Centrifuge Recap, SNL	10,330	0	0	0	0	0
Tonopah Test Range Radar #2, SNL	18,176	0	0	0	18,176	+18,176
Classified Machine Shop Equipment, SRS	34,750	0	0	0	0	0
Spare Tritium Extraction Furnace, formerly Tritium Extraction Facility (TEF) Spare Furnace, SRS	24,000	0	0	0	0	0
9201-01 Laser Cutting System, Y-12	12,000	0	0	0	0	0
9201-5N Manufacturing Modernization, Y-12	49,500	0	0	0	5,000	+5,000
Calciner, Y-12	149,500	132,910	8,000	8,590	0	-8,000
Direct Chip Melt Bottom Loading Furnace (formerly Bottom Loading Furnace), Y-12	219,182	51,163	31,725	33,600	35,560	+3,835
DUM 3500T Press Control Upgrade, Y-12	12,000	0	0	0	12,000	+12,000
DUM A2 Wing New Weldbox Installation, Y-12	16,597	1,597	15,000	0	0	-15,000
DUM Direct Cast Production Furnace Execution (formerly Direct Casting Production Furnace), Y-12	23,000	0	12,000	11,000	0	-12,000
DUM Foundry 2nd Vacuum Arc Remelt (VAR) Furnace, Y-12	23,000	0	0	0	23,000	+23,000
DUM Rolling Annealing Furnace Installation, Y-12	20,960	960	10,000	10,000	0	-10,000
DUM Rolling Building 9215 High Temperature Salt Bath 350B Installation, Y-12	12,800	0	12,800	0	0	-12,800
GMM 9201-01 Hydroform, Y-12	15,000	0	0	0	0	0
Machine Capability Lathe #2, Y-12	10,000	0	0	10,000	0	0
Machine Capability Lathe #3, Y-12	12,000	0	0	1,500	10,500	+10,500
Machine Capability Lathe #4, Y-12	14,000	0	0	0	1,500	+1,500
SM Design and Balance of Plant MIE, Y-12	30,000	0	2,000	28,000	0	-2,000
Total, Capital Equipment	**N/A**	**N/A**	**548,323**	**521,573**	**605,341**	**55,458**

Outyears for Capital Equipment Summary ($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
Capital Equipment (> $500K)					
Total Non-MIE Capital Equipment (TEC <$10M)	378,075	370,135	373,816	372,679	N/A
Drill and Press D&D and Replacement, LANL	0	0	31,381	0	0
Lujan Scattering Center Capability - Multiple Simultaneous Neutron Measurements, LANL	0	2,000	8,000	0	0
Metal Recovery System, LANL	0	3,000	24,000	0	0
MRR Open Front Hood Install, LANL	16,048	0	0	0	0
10kg Firing Tank for HESF, LLNL	0	0	12,000	0	0
DAF End of Life equipment replacement, LLNL	0	0	19,594	0	0
DAF Pit Certification support gloveboxes, LLNL	24,703	0	0	0	0
DAF pit residue processing gloveboxes, LLNL	0	24,755	0	0	0
DAF SCE assembly equipment, LLNL	0	0	0	0	21,843
DAF SCE part fabrication equipment, LLNL	0	0	0	16,000	0
High Volume Production Special Equipment Installation, LLNL	0	0	10,438	0	0
DUF6 to DUF4 Conversion Project (Formerly DUF4 Conversion Line) PPPO	10,000	0	0	0	0
Diffusion Furnace Replacements (Qty 5), SNL	0	0	0	0	19,740
Flexible Production Stepper (previously I-line Multiple Wafer Size Stepper (ASML1 Replacement)), SNL	13,680	0	0	0	0
FSI Track Replacement (3 of 4) (previously FSI-TEL Track (ASML5)), SNL	12,120	0	0	0	0
FSI Track Replacement (4 of 4), SNL	0	10,910	0	0	0
QU3992 Centrifuge Recap, SNL	0	10,330	0	0	0
Classified Machine Shop Equipment, SRS	0	750	34,000	0	0
Spare Tritium Extraction Furnace, formerly Tritium Extraction Facility (TEF) Spare Furnace, SRS	0	0	0	0	24,000
9201-01 Laser Cutting System, Y-12	0	0	0	12,000	0
9201-5N Manufacturing Modernization, Y-12	44,500	0	0	0	0
Direct Chip Melt Bottom Loading Furnace (formerly Bottom Loading Furnace), Y-12	33,400	25,000	8,734	0	0
GMM 9201-01 Hydroform, Y-12	0	1,000	14,000	0	0
Machine Capability Lathe #4, Y-12	12,500	0	0	0	0
Total, Capital Equipment	**545,026**	**447,880**	**535,963**	**400,679**	**N/A**

21-D-512 Los Alamos Plutonium Pit Production Project (LAP4)
Los Alamos National Laboratory (LANL)
Los Alamos, New Mexico
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary:

The Fiscal Year (FY) 2025 Request for the Los Alamos Plutonium Pit Production Project (LAP4) is $470,000,000. The FY 2025 Request includes funds to finish design activities on the 30 Reliable Equipment Installation (30R) and Training and Development Center (TDC) subprojects; and to continue construction activities in the Decontamination and Demolition (D&D) subproject, 30 Base Equipment Installation (30B) subproject, and the West Entry Control Facility (WECF) subproject; and to start construction activities on the 30R and TDC subprojects.

LAP4 includes the procurement of equipment and systems and is a contributor to support a baseline production increase from 10 plutonium pits per year (ppy) at LANL to not less than 30 ppy, and to provide equipment and infrastructure necessary to support the reliable and timely provision of strategic weapons systems' primary components to strategic defense missions.

Critical Decision (CD)-1, *Approve Alternative Selection and Cost Range*, was approved April 27, 2021, with a TPC cost range of $2,700,000,000 - $3,900,000,000. The full project TPC will not be determined until all the subprojects are baselined at CD-2/3 approval. Both Total Estimated Cost (TEC) and Other Project Cost (OPC) activities will be funded through this line-item.

Per DOE O 413.3B, any cost savings realized from a LAP4 subproject will be returned to the LAP4 Total Project contingency pool for use, as needed after approval of a baseline change, in other LAP4 subprojects.

Significant Changes:

This Construction Project Data Sheet (CPDS) is an update of the FY 2024 CPDS and does not include a new start for the budget year. These changes are reflected in Critical Milestone History and represent the current planning basis of the project. These changes are currently under review by NNSA. Until design is complete, and the performance baselines are established for each subproject, the finalization of the required funding profiles and completion dates cannot be established. Outyear funding amounts may be revised in future budget requests as NNSA baselines the project in accordance with DOE O 413.3B.

Through numerous iterations of equipment analysis workshops, scope from the originally planned 30B subproject was transferred to the 30R subproject. The transfer of this scope has been reflected in schedules and cost estimates. In addition, the D&D subproject was re-sequenced to align with the approved 30B baseline but remained within its established CD-4 and TPC commitments.

NNSA's current TPC forecast has increased by $720 million from the previous CPDS, with the project completion date extended by 1 year to FY 2032. NNSA continues to assess the impacts on the TPC and the CD-4 date. Schedule and cost estimates have increased due to the alignment of scope between 30B and 30R, and partially accounting for parametric estimates on 30R in advance of not having fully developed baseline estimates. Additionally, other contributing factors include escalation, longer glovebox fabrications durations, higher resource rates, and ongoing challenges with executing work within an operating nuclear facility. Construction projects across the nation are experiencing continuing impacts and the Nuclear Security Enterprise is especially susceptible to market conditions due to the skills and clearances required of project personnel and the small, domestic, specialty suppliers often required. The project will be able to further characterize impacts associated with current conditions as the remaining subprojects fully develop baselines at CD-2/3. NNSA is also evaluating the new 30 Diamond Strategy and its impact to existing baseline plans. The 30D Strategy is an execution strategy that optimally sequences, both programmatic and project activities, to achieve the 30 pit per year (PPY) at LANL as soon as possible.

Specific details on the LAP4 subprojects are listed below.

D&D Subproject (21-D-512-01): The D&D subproject has continued construction (removal of gloveboxes and equipment) and the associated support activities like development of Integrated Work Documents and work control documents for future D&D efforts. The D&D subproject has an established performance measurement baseline with a TPC of $529,000,000 and a schedule completion date of March 2027.

30 Base Equipment Installation (30B) Subproject (21-D-512-02): Achieved CD-3A, *Approve Long-Lead Procurements* on January 3, 2022, with a TPC of $72,000,000 and a completion date of 3Q FY 2024. Achieved CD-3B, *Approve Long-Lead Procurements* on August 5, 2022, with a TPC of $43,000,000 and a completion date of 3Q FY 2024. The 30B subproject reached 90% design completion, established a performance baseline (CD-2), and approved start of construction (CD-3) on January 19, 2023, with a TPC of $1,864,126,000 and CD-4 approval planned in August 2030. The final design is expected in 3Q FY 2024.

30 Reliable Equipment Installation (30R) Subproject (21-D-512-03): Achieved CD-3A, *Approve Long-Lead Procurements* package on March 29, 2023, with a TPC of $99,000,000 and a completion date of 1Q FY 2026. Final design completion is anticipated in December 2024 and establishing a performance baseline (CD-2) and approving start of construction (CD-3) is anticipated in December 2024. The long-lead procurement activities are intended to help mitigate the delays associated with achieving CD-2/3 as originally planned at CD-1.

Training and Development Center (TDC) Subproject (21-D-512-04): Currently at CD-1, the TDC subproject anticipates final design completion, establishing a performance baseline (CD-2), and approving start of construction (CD-3) in August 2026.

West Entry Control Facility (WECF) Subproject (21-D-512-05): The WECF subproject achieved CD-3A, *Approve Long-Lead Procurements* package on December 15, 2023, with a TPC of $27,800,000 and a completion of 1Q FY2025. Final design completion is anticipated for the 3Q FY 2024 and establishing a performance baseline (CD-2) and approving start of construction (CD-3) in September 2024.

A Federal Project Director has been assigned to the project.

Critical Milestone History:

Los Alamos Plutonium Pit Production Project (21-D-512)

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2021	11/25/2015	4Q FY 2020	1Q FY 2021	4Q FY 2022	4Q FY 2022	4Q FY 2022	2Q FY 2024	4Q FY 2028
FY 2022	11/25/2015	4Q FY 2020	04/27/2021	2Q FY 2023	1Q FY 2023	2Q FY 2023	N/A	4Q FY 2028
FY 2023	11/25/2015	03/08/2021	04/27/2021	4Q FY 2024	3Q FY 2024	4Q FY 2024	N/A	4Q FY 2028
FY 2024	11/25/2015	03/08/2021	04/27/2021	3Q FY 2025	3Q FY 2025	3Q FY 2025	N/A	4Q FY 2031
FY 2025	11/25/2015	03/08/2021	04/27/2021	4Q FY 2026	4Q FY 2026	4Q FY 2026	N/A	4Q FY 2032

Decontamination and Demolition (D&D) Subproject (21-D-512-01)

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2023	11/25/2015	03/08/2021	04/27/2021	11/18/2021	2QFY 2022	11/18/2021	2Q FY 2027
FY 2024	11/25/2015	03/08/2021	04/27/2021	11/18/2021	7/20/2022	11/18/2021	2Q FY 2027
FY 2025	11/25/2015	03/08/2021	04/27/2021	11/18/2021	7/20/2022	11/18/2021	2Q FY 2027

30 Base Equipment Installation (30B) Subproject (21-D-512-02)

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2023	11/25/2015	03/08/2021	04/27/2021	1Q FY 2023	4Q FY 2022	1Q FY 2023	4Q FY 2026
FY 2024	11/25/2015	03/08/2021	04/27/2021	01/19/2023	4Q FY 2023	01/19/2023	4Q FY 2030
FY 2025	11/25/2015	03/08/2021	04/27/2021	01/19/2023	3Q FY 2024	01/19/2023	4Q FY 2030

Fiscal Year	CD-3A	CD-3B
FY 2022	2Q FY 2022	N/A
FY 2023	01/03/2022	N/A
FY 2024	01/03/2022	08/05/2022
FY 2025	01/03/2022	08/05/2022

CD-3A – Approve Long-Lead Procurements
CD-3B – Approve Long-Lead Procurements

30 Reliable Equipment Installation (30R) Subproject (21-D-512-03)

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2023	11/25/2015	03/08/2021	04/27/2021	1Q FY 2024	4Q FY 2023	1Q FY 2024	4Q FY 2028
FY 2024	11/25/2015	03/08/2021	04/27/2021	4Q FY 2024	1Q FY 2025	4Q FY 2024	4Q FY 2031
FY 2025	11/25/2015	03/08/2021	04/27/2021	1Q FY 2025	1Q FY 2025	1Q FY 2025	4Q FY 2032

Fiscal Year	CD-3A
FY 2023	1Q FY 2023
FY 2024	3Q FY 2023
FY 2025	03/29/2023

CD-3A – Approve Long-Lead Procurements
Training and Development Center Subproject (TDC) (21-D-512-04)

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2023	11/25/2015	03/08/2021	04/27/2021	4Q FY 2024	3Q FY 2024	4Q FY 2024	4Q FY 2028
FY 2024	11/25/2015	03/08/2021	04/27/2021	3Q FY 2025	3Q FY 2025	3Q FY 2025	4Q FY 2030
FY 2025	11/25/2015	03/08/2021	04/27/2021	4Q FY 2026	4Q FY 2026	4Q FY 2026	4Q FY 2030

West Entry Control Facility (WECF) Subproject (21-D-512-05)

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2023	11/25/2015	03/08/2021	04/27/2021	2Q FY 2023	4Q FY 2022	2Q FY 2023	2Q FY 2026
FY 2024	11/25/2015	03/08/2021	04/27/2021	3Q FY 2024	3Q FY 2024	3Q FY 2024	4Q FY 2028
FY 2025	11/25/2015	03/08/2021	04/27/2021	4Q FY 2024	3Q FY 2024	4Q FY 2024	4Q FY 2028

Fiscal Year	CD-3A
FY 2025	12/15/2023

CD-3A – Approve Long-Lead Procurements

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range
Conceptual Design Complete – Actual date the conceptual design was completed
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
Final Design Complete – Estimated/Actual date the project design will be/was complete(d)
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout

Project Cost History

Los Alamos Plutonium Pit Production Project (21-D-512)

($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC	OPC, Total	TPC
FY 2021	116,900	79,100	196,000	30,000	30,000	226,000[a]
FY 2022	456,000	3,035,000	3,491,000	404,000	404,000	3,895,000
FY 2023	489,897	3,005,340	3,495,237	399,763	399,763	3,895,000[b]
FY 2024	555,285	3,525,496	4,080,781	649,094	649,094	4,729,875
FY 2025	483,407	4,350,888	4,834,295	615,394	615,394	5,449,689[c]

D&D Subproject (21-D-512-01)

($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC	OPC, Total	TPC
FY 2023	22,689	459,695	482,384	46,616	46,616	529,000
FY 2024	22,689	459,695	482,384	46,616	46,616	529,000
FY 2025	22,684	459,700	482,384	46,616	46,616	529,000

30B Subproject (21-D-512-02)

[a] The project cost history amounts for FY 2021 reflected only funding requested in that budget year; TPC is not indicative of the total project cost.
[b] The TPC reflects the top of the CD-1 cost range.
[c] NNSA continues to assess the impacts on the TPC and the CD-4 date. Schedule and cost estimates have increased due to the alignment of scope between 30B and 30R, and partially accounting for parametric estimates on 30R in advance of not having fully developed baseline estimates. Additionally, other contributing factors include escalation, longer Gb fabrications durations, higher resource rates, and ongoing challenges with executing work within an operating nuclear facility. The TPC estimate reflects $5,449,689K.

($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC	OPC, Total	TPC
FY 2023	212,626	1,599,990	1,812,616	213,384	213,384	2,026,000
FY 2024	204,894	1,268,160	1,473,054	391,072	391,072	1,864,126
FY 2025	120,449	1,397,697	1,518,146	345,980	345,980	1,864,126

30R Subproject (21-D-512-03)

($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC	OPC, Total	TPC
FY 2023	163,074	517,871	680,945	79,055	79,055	760,000
FY 2024	236,194	1,369,857	1,606,051	150,698	150,698	1,756,749
FY 2025	236,194	2,089,671	2,325,865	150,698	150,698	2,476,563

TDC Subproject (21-D-512-04)

($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC	OPC, Total	TPC
FY 2023	71,185	331,947	403,132	46,868	46,868	450,000
FY 2024	71,185	331,947	403,132	46,868	46,868	450,000
FY 2025	83,757	307,983	391,740	58,260	58,260	450,000

WECF Subproject (21-D-512-05)

($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC	OPC, Total	TPC
FY 2023	20,323	95,837	116,160	13,840	13,840	130,000
FY 2024	20,323	95,837	116,160	13,840	13,840	130,000
FY 2025	20,323	95,837	116,160	13,840	13,840	130,000

2. Project Scope and Justification

Scope

The project scope includes the further repurposing of spaces within the existing LANL Plutonium Facility 4 (PF-4) and Sigma facility, beyond the scope of repurposing in the Chemistry and Metallurgy Research Replacement (CMRR) project, including removal of previously installed equipment and support systems as necessary to accommodate new pit production equipment. Scope includes design, construction, and installation of processing equipment, support systems, utilities infrastructure, physical infrastructure, and security features to reach the capability to produce 30 ppy. PF-4 is an operating Hazard Category (HC)- 2, Security Category 1 Nuclear Facility. Sigma is a radiological support facility. PF-4 and supporting capabilities need to be modified to achieve the required pit production capability/capacity.

The LAP4 project is composed of the five subprojects identified below.

Decontamination and Demolition (D&D) Subproject (21-D-512-01)
Decontamination and demolition of gloveboxes and programmatic equipment in PF-4 in preparation for installation of pit production equipment. The scope encompasses waste characterization, D&D, size reduction, removal, waste handling, and disposition.

30 Base Equipment Installation (30B) Subproject (21-D-512-02)
Pit production enclosures and programmatic equipment procurement and installation to support pit production capacity of a base of 30 ppy at 50 percent confidence. The scope encompasses designing, procuring, installing, testing, transitioning to operations (TTO), and hot startup of new gloveboxes and associated equipment in PF-4. To support reduced project and program risk, long-lead procurement and fabrication of enclosures and process equipment was approved on January 3, 2022, with a cost of $72M, and is expected to be complete in June 2024. Additional long lead procurement and site preparation was approved on August 5, 2022, with a cost of $43M, and is expected to be complete in June 2024. Advanced procurement of the long-lead equipment integrates with the approval of CD-2/3 on January 19, 2023, enabling installation to proceed immediately after the approval of the performance baseline. Installation of the long-lead procurement will proceed as the remainder of the 30B enclosures and equipment are fabricated. This tailored approach minimizes impacts to program operations and increases construction efficiencies. Additionally, temporary 80,000 sq ft of warehouse space will be provided for the pre-staging of equipment for setup, testing, and assembly, prior to final installation.

30 Reliable Equipment Installation (30R) Subproject (21-D-512-03)
Pit production enclosures and programmatic equipment procurement and installation to support pit production capacity of 30 ppy reliably. The scope encompasses designing, procuring, installing, testing, transitioning to operations (TTO), and hot startup of new gloveboxes and associated equipment in PF-4 and the Sigma facility. The 30R subproject expands the capability and capacity to provide 30 war reserve pits per year to the stockpile at a 90% confidence using a single shift. To support reduced project and program risk, long-lead procurement and fabrication of enclosures and process equipment was approved on March 29, 2023, with a cost of $99M, and is expected to be complete in FY 2025. Advanced procurement of the long-lead equipment integrates with the anticipated approval of CD-2/3 in December of 2024, enabling installation to proceed immediately after the approval of the performance baseline. Installation of the long-lead procurement will proceed as the remainder of the 30R enclosures and equipment are fabricated. This tailored approach minimizes impacts to program operations and increases construction efficiencies.

Training and Development Center (TDC) Subproject (21-D-512-04)
The Training capability will ensure that production personnel can effectively receive approximately 700,000 required annual staff training hours for initial and annual training, including certification to fully satisfy skill and qualification requirements. The Development capability will support the enduring pit production mission by providing facilities and space for process improvement and development in a non-nuclear environment. The two nonnuclear capabilities require 75,000 net square feet and are briefly summarized below. Design activities are underway and CD-2/3 approval followed by final design completion is anticipated in Q4 FY2026.

- Nuclear worker training laboratories for glovebox operator and fissile material handler fundamentals training and process worker requalification training. The requalification training laboratories will have a dual purpose to also support production process and technology development activities.
- Unclassified Training areas including classrooms, computer-based training rooms, a training records management center and training staff office space.
- Classified Training areas including classrooms, conference rooms, auditorium/lecture hall, classified records management and storage, facility control system simulation area, cold machine shop, a glovebox equipment pre-installation testing area, and a classified parts vault-type room.

West Entry Control Facility (WECF) Subproject (21-D-512-05)
The TA-55 WECF is required to accommodate the additional 800 workers per day entering the property protection area at TA-55 projected to implement the 30 ppy mission. This projected increase effectively doubles the workforce entrance control processing demand. The new WECF, like the existing East ECF, must be a DOE-compliant personnel screening facility which maintains integrity of the protected area at TA-55 to enable safe and secure environment for manufacturing operations and support the required 24/7 schedule. To support reduced project and program risk, long-lead procurement was approved on December 15, 2023, with a cost of $28M. Design activities are underway and final design completion is anticipated in Q3 FY2024. CD-2/3 approval is anticipated in Q4 FY2024.

Justification
The NNSA's ability to produce pits in the required quantities established by the Nuclear Weapons Council (NWC) is an essential component of the nuclear deterrent. An Analysis of Alternatives (AoA) was conducted after CD-0, in accordance with the requirements of Office of Management and Budget (OMB) Circular A-11. The NNSA Administrator selected a

preferred alternative on May 10, 2018, to continue pit production investments to reach the 30 ppy capability at LANL, and to repurpose facilities at the Savannah River Site to produce 50 pits per year.

Sustained and reliable pit production at LANL additionally requires a commensurate increase in infrastructure and support facilities to accommodate the increased activity in a nuclear facility with a diversified mission portfolio. Resources necessary to operate and maintain a sustained and substantial production capacity drives a critical need for training infrastructure, which is included in this project. Increased ingress and egress of production personnel is also essential, and this project includes a new personnel access point/facility into Technical Area-55, which encloses the plutonium facilities.

The project is being conducted in accordance with the project management requirements in DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets.* Funds appropriated under the Plutonium Modernization Program and described in this data sheet may be used for contracted support services to the Federal Project Director and to conduct independent reviews of design and construction for LAP4.

Key Performance Parameters (KPPs)

The KPPs represent the minimum acceptable performance that the project must achieve. Key Performance Parameters were developed as part of the CD-1 approval and will be finalized for CD-2 approval.

Preliminary Key Performance Measures
D&D: Complete turnover, to facility operations, of the space and infrastructure of D&D items in PF-4 identified in the LAP4 Program Requirement Document (PRD), Appendix B.
D&D: Complete disposition and removal of decommissioned, demolished, and removed equipment waste from TA-55 under LAP4.
30B KPP1: Complete turnover to operations and equipment hot testing (as applicable) of the minimum equipment necessary for 30 war reserve PPY.
30B KPP2: Complete turnover to operations and equipment hot testing (as applicable) of the remaining equipment to support 30 war reserve PPY with moderate confidence.
30R: Complete equipment hot testing and turnover of all 30 ppy reliable equipment and structures, systems, and components in PF-4 and Sigma identified in the LAP4 PRD, Appendix B, to Weapons Production for initiation of Process Prove-in activities.
LAP4 Infrastructure: Training and Development Center, and TA-55 West Entry Control Facility will receive beneficial occupancy to allow operations.

3. Financial Schedule

Total Project (21-D-512)

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2021	153,946	153,946	21,015
FY 2022	138,021	138,021	91,642
FY 2023	154,952	154,952	138,353
FY 2024 [a]	-22,003	-22,003	149,252
FY 2025	55,794	55,794	78,101
FY 2026	2,697	2,697	5,044
Total Design	**483,407**	**483,407**	**483,407**
Construction			
FY 2021	72,054	72,054	5,167
FY 2022	200,063	200,063	64,398
FY 2023	284,282	284,282	230,683
FY 2024	639,003	639,003	482,550
FY 2025	325,336	325,336	423,219
FY 2026	623,515	623,515	601,740
FY 2027	850,139	850,139	611,316
FY 2028	853,307	853,307	591,037
FY 2029	503,189	503,189	575,400
FY 2030	0	0	547,867
FY 2031	0	0	216,000
FY 2032	0	0	1,511
Total Construction	**4,350,888**	**4,350,888**	**4,350,888**
TEC			
FY 2021	226,000	226,000	26,182
FY 2022	338,084	338,084	156,040
FY 2023	439,234	439,234	369,036
FY 2024	617,000	617,000	631,802
FY 2025	381,130	381,130	501,320
FY 2026	626,212	626,212	606,784
FY 2027	850,139	850,139	611,316
FY 2028	853,307	853,307	591,037
FY 2029	503,189	503,189	575,400
FY 2030	0	0	547,867
FY 2031	0	0	216,000
FY 2032	0	0	1,511
Total TEC	**4,834,295**	**4,834,295**	**4,834,295**

[a] Forecasted costs for 30B design in FY2024 are less than planned and shifting the additional funding to construction so that overall TEC funding stays the same.

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2019	1,932	1,932	1,930
FY 2020	58,068	58,068	24,950
FY 2021	0	0	28,241
FY 2022	11,916	11,916	7,548
FY 2023	149,000	149,000	8,711
FY 2024	53,000	53,000	77,700
FY 2025	88,870	88,870	82,581
FY 2026	143,788	143,788	94,660
FY 2027	50,361	50,361	113,667
FY 2028	51,693	51,693	68,091
FY 2029	6,766	6,766	25,000
FY 2030	0	0	38,204
FY 2031	0	0	34,819
FY 2032	0	0	9,292
Total, OPC	**615,394**	**615,394**	**615,394**
Total Project Costs (TPC)			
FY 2019	1,932	1,932	1,930
FY 2020	58,068	58,068	24,950
FY 2021	226,000	226,000	54,423
FY 2022	350,000	350,000	163,588
FY 2023	588,234	588,234	377,747
FY 2024[a]	670,000	670,000	709,502
FY 2025	470,000	470,000	583,901
FY 2026	770,000	770,000	701,444
FY 2027	900,500	900,500	724,983
FY 2028	905,000	905,000	659,128
FY 2029	509,955	509,955	600,400
FY 2030	0	0	586,071
FY 2031	0	0	250,819
FY 2032	0	0	10,803
Total TPC	**5,449,689**	**5,449,689**	**5,449,689**

[a] FY 2024 Budget Authority assumptions are based on the FY 2024 President's Budget Request.

Decontamination and Decommissioning (D&D) Subproject (21-D-512-01)

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2021	22,689	22,689	15,504
FY 2022	0	0	7,185
FY 2023 [a]	-5	-5	-5
Total Design	**22,684**	**22,684**	**22,684**
Construction			
FY 2021	72,054	72,054	5,167
FY 2022	74,700	74,700	63,148
FY 2023	118,951	118,951	103,458
FY 2024	92,000	92,000	138,812
FY 2025	58,840	58,840	86,099
FY 2026	23,155	23,155	39,000
FY 2027	20,000	20,000	24,016
Total Construction	**459,700**	**459,700**	**459,700**
TEC			
FY 2021	94,743	94,743	20,671
FY 2022	74,700	74,700	70,333
FY 2023	118,946	118,946	103,453
FY 2024	92,000	92,000	138,812
FY 2025	58,840	58,840	86,099
FY 2026	23,155	23,155	39,000
FY 2027	20,000	20,000	24,016
Total TEC	**482,384**	**482,384**	**482,384**

[a] Credited design cost in FY 2023. Funds were balanced to cost and transferred to construction so that TEC funding remained the same.

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2019	302	302	300
FY 2020	9,289	9,289	3,875
FY 2021	0	0	4,387
FY 2022	1,000	1,000	-892
FY 2023	2,000	2,000	70
FY 2024	6,000	6,000	5,000
FY 2025	15,000	15,000	8,881
FY 2032	0	0	0
FY 2033	0	0	0
Total, OPC	**46,616**	**46,616**	**46,616**
Total Project Costs (TPC)			
FY 2019	302	302	300
FY 2020	9,289	9,289	3,875
FY 2021	94,743	94,743	25,058
FY 2022	75,700	75,700	69,441
FY 2023	120,946	120,946	103,523
FY 2024	98,000	98,000	143,812
FY 2025	73,840	73,840	94,980
FY 2032	0	0	0
FY 2033	0	0	0
Total TPC	**529,000**	**529,000**	**529,000**

30 Base Equipment Installation (30B) Subproject (21-D-512-02)

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2021	130,257	130,257	5,511
FY 2022	74,637	74,637	71,294
FY 2023	0	0	34,901
FY 2024[a]	-84,445	-84,445	8,743
Total Design	**120,449**	**120,449**	**120,449**
Construction			
FY 2022	125,363	125,363	1,250
FY 2023	124,369	124,369	127,225
FY 2024	451,445	451,445	248,738
FY 2025	183,659	183,659	268,600
FY 2026	251,720	251,720	258,100
FY 2027	211,141	211,141	137,300
FY 2028	50,000	50,000	160,200
FY 2029	0	0	90,400
FY 2030	0	0	105,884
Total Construction	**1,397,697**	**1,397,697**	**1,397,697**
TEC			
FY 2021	130,257	130,257	5,511
FY 2022	200,000	200,000	72,544
FY 2023	124,369	124,369	162,126
FY 2024	367,000	367,000	257,481
FY 2025	183,659	183,659	268,600
FY 2026	251,720	251,720	258,100
FY 2027	211,141	211,141	137,300
FY 2028	50,000	50,000	160,200
FY 2029	0	0	90,400
FY 2030	0	0	105,884
Total TEC	**1,518,146**	**1,518,146**	**1,518,146**

[a] Forecasted costs for 30B design in FY 2024 are less than planned and shifting the additional funding to construction so that overall TEC funding stays the same.

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2019	966	966	966
FY 2020	29,034	29,034	12,492
FY 2021	0	0	14,138
FY 2022	4,000	4,000	78
FY 2023	136,972	136,972	40
FY 2024	47,000	47,000	72,700
FY 2025	42,028	42,028	72,700
FY 2026	85,980	85,980	72,700
FY 2027	0	0	72,700
FY 2028	0	0	27,466
Total, OPC	**345,980**	**345,980**	**345,980**
Total Project Costs (TPC)			
FY 2019	966	966	966
FY 2020	29,034	29,034	12,492
FY 2021	130,257	130,257	19,649
FY 2022	204,000	204,000	72,622
FY 2023	261,341	261,341	162,166
FY 2024	414,000	414,000	330,181
FY 2025	225,687	225,687	341,300
FY 2026	337,700	337,700	330,800
FY 2027	211,141	211,141	210,000
FY 2028	50,000	50,000	187,666
FY 2029	0	0	90,400
FY 2030	0	0	105,884
Total TPC	**1,864,126**	**1,864,126**	**1,864,126**

30 Reliable Equipment Installation (30R) Subproject (21-D-512-03)

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2022	52,895	52,895	13,163
FY 2023	130,963	130,963	89,832
FY 2024	29,542	29,542	103,811
FY 2025	22,794	22,794	29,388
Total Design	**236,194**	**236,194**	**236,194**
Construction			
FY 2023	40,962	40,962	0
FY 2024	42,558	42,558	80,000
FY 2025	40,000	40,000	43,520
FY 2026	244,640	244,640	244,640
FY 2027	463,859	463,859	350,000
FY 2028	754,463	754,463	350,000
FY 2029	503,189	503,189	425,000
FY 2030	0	0	394,000
FY 2031	0	0	201,000
FY 2032	0	0	1,511
Total Construction	**2,089,671**	**2,089,671**	**2,089,671**
TEC			
FY 2022	52,895	52,895	13,163
FY 2023	171,925	171,925	89,832
FY 2024	72,100	72,100	183,811
FY 2025	62,794	62,794	72,908
FY 2026	244,640	244,640	244,640
FY 2027	463,859	463,859	350,000
FY 2028	754,463	754,463	350,000
FY 2029	503,189	503,189	425,000
FY 2030	0	0	394,000
FY 2031	0	0	201,000
FY 2032	0	0	1,511
Total TEC	**2,325,865**	**2,325,865**	**2,325,865**

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2019	377	377	377
FY 2020	11,623	11,623	4,868
FY 2021	0	0	5,510
FY 2022	405	405	1,650
FY 2023	0	0	0
FY 2024	0	0	0
FY 2025	25,745	25,745	0
FY 2026	42,324	42,324	4,001
FY 2027	38,361	38,361	20,000
FY 2028	31,863	31,863	30,000
FY 2029	0	0	15,000
FY 2030	0	0	30,000
FY 2031	0	0	30,000
FY 2032	0	0	9,292
Total, OPC	**150,698**	**150,698**	**150,698**
Total Project Costs (TPC)			
FY 2019	377	377	377
FY 2020	11,623	11,623	4,868
FY 2021	0	0	5,510
FY 2022	53,300	53,300	14,813
FY 2023	171,925	171,925	89,832
FY 2024	72,100	72,100	183,811
FY 2025	88,539	88,539	72,908
FY 2026	286,964	286,964	248,641
FY 2027	502,220	502,220	370,000
FY 2028	786,326	786,326	380,000
FY 2029	503,189	503,189	440,000
FY 2030	0	0	424,000
FY 2031	0	0	231,000
FY 2032	0	0	10,803
Total TPC	**2,476,563**	**2,476,563**	**2,476,563**

Training and Development Center (TDC) Subproject (21-D-512-04)

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2022	304	304	0
FY 2023	14,856	14,856	0
FY 2024	32,900	32,900	30,000
FY 2025	33,000	33,000	48,713
FY 2026	2,697	2,697	5,044
Total Design	**83,757**	**83,757**	**83,757**
Construction			
FY 2025	0	0	0
FY 2026	104,000	104,000	35,000
FY 2027	155,139	155,139	75,000
FY 2028	48,844	48,844	75,000
FY 2029	0	0	60,000
FY 2030	0	0	47,983
FY 2031	0	0	15,000
Total Construction	**307,983**	**307,983**	**307,983**
TEC			
FY 2022	304	304	0
FY 2023	14,856	14,856	0
FY 2024	32,900	32,900	30,000
FY 2025	33,000	13,000	48,713
FY 2026	106,697	106,697	40,044
FY 2027	155,139	155,139	75,000
FY 2028	48,844	68,844	75,000
FY 2029	0	0	60,000
FY 2030	0	0	47,983
FY 2031	0	0	15,000
Total TEC	**391,740**	**391,740**	**391,740**

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2019	223	223	223
FY 2020	6,186	6,186	2,882
FY 2021	0	0	3,263
FY 2022	2,796	2,796	2,837
FY 2023	8,000	8,000	6,573
FY 2024	0	0	0
FY 2025	0	0	0
FY 2026	2,459	2,459	1,459
FY 2027	12,000	12,000	8,000
FY 2028	19,830	19,830	10,000
FY 2029	6,766	6,766	10,000
FY 2030	0	0	8,204
FY 2031	0	0	4,819
Total, OPC	**58,260**	**58,260**	**58,260**
Total Project Costs (TPC)			
FY 2019	223	223	223
FY 2020	6,186	6,186	2,882
FY 2021	0	0	3,263
FY 2022	3,100	3,100	2,837
FY 2023	22,856	22,856	6,573
FY 2024	32,900	32,900	30,000
FY 2025	33,000	13,000	48,713
FY 2026	109,156	109,156	41,503
FY 2027	167,139	167,139	83,000
FY 2028	68,674	88,674	85,000
FY 2029	6,766	6,766	70,000
FY 2030	0	0	56,187
FY 2031	0	0	19,819
Total TPC	**450,000**	**450,000**	**450,000**

West Entry Control Facility (WECF) Subproject (21-D-512-05)

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2021	1,000	1,000	0
FY 2022	10,185	10,185	0
FY 2023	9,138	9,138	13,625
FY 2024	0	0	6,698
Total Design	**20,323**	**20,323**	**20,323**
Construction			
FY 2023	0	0	0
FY 2024	53,000	53,000	15,000
FY 2025	42,837	42,837	25,000
FY 2026	0	0	25,000
FY 2027	0	0	25,000
FY 2028	0	0	5,837
Total Construction	**95,837**	**95,837**	**95,837**
TEC			
FY 2021	1,000	1,000	0
FY 2022	10,185	10,185	0
FY 2023	9,138	9,138	13,625
FY 2024	53,000	53,000	21,698
FY 2025	42,837	42,837	25,000
FY 2026	0	0	25,000
FY 2027	0	0	25,000
FY 2028	0	0	5,837
Total TEC	**116,160**	**116,160**	**116,160**

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2019	64	64	64
FY 2020	1,936	1,936	833
FY 2021	0	0	943
FY 2022	3,715	3,715	3,875
FY 2023	2,028	2,028	2,028
FY 2024	0	0	0
FY 2025	6,097	6,097	1,000
FY 2026	0	0	3,500
FY 2027	0	0	972
FY 2028	0	0	625
Total, OPC	**13,840**	**13,840**	**13,840**
Total Project Costs (TPC)			
FY 2019	64	64	64
FY 2020	1,936	1,936	833
FY 2021	1,000	1,000	943
FY 2022	13,900	13,900	3,875
FY 2023	11,166	11,166	15,653
FY 2024	53,000	53,000	21,698
FY 2025	48,934	48,934	26,000
FY 2026	0	0	28,500
FY 2027	0	0	25,972
FY 2028	0	0	6,462
Total TPC	**130,000**	**130,000**	**130,000**

4. Details of Project Cost Estimate[a]

Overall Project (21-D-512)

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline[a]
Total Estimated Cost (TEC)			
Design			
Design	406,313	478,354	N/A
Federal Design Support	14,298	14,298	N/A
Contingency	62,796	62,633	N/A
Total Design	**483,407**	**555,285**	**N/A**
Construction			
Site Work	98,267	80,953	N/A
Equipment	240,635	227,318	N/A
Construction	2,102,749	2,006,772	N/A
Federal Design Support	82,544	82,544	N/A
Contingency	1,826,693	1,127,909	N/A
Total Construction	**4,350,888**	**3,525,496**	**N/A**
Total Estimated Cost (TEC)	**4,834,295**	**4,080,781**	**N/A**
Contingency, TEC	***1,889,489***	***1,190,542***	**N/A**
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Activities	66,567	55,175	N/A
Startup	475,799	445,905	N/A
Contingency	73,028	148,014	N/A
Total OPC	**615,394**	**649,094**	**N/A**
Contingency, OPC	*73,028*	*148,014*	*N/A*
Total Project Cost	**5,449,689**	**4,729,875**	**N/A**
Total Contingency (TEC+OPC)	***1,962,517***	***1,338,556***	***N/A***

[a] The contingency was increased to account for higher than estimated 30R forecasted values.

Decontamination and Demolition (D&D) Subproject (21-D-512-01)[a]

($K)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	22,684	22,689	22,689
Federal Design Support	0	0	0
Contingency	0	0	0
Total Design	**22,684**	**22,689**	**22,689**
Construction			
Site Preparation	0	0	0
Equipment	46,238	46,238	46,238
Construction	258,244	258,244	258,244
Federal Design Support	11,946	11,946	11,946
Contingency	143,272	143,267	143,267
Total Construction	**459,700**	**459,695**	**459,695**
Total Estimated Cost (TEC)	**482,384**	**482,384**	**482,384**
Contingency, TEC	***143,272***	***143,267***	***143,267***
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Activities	8,616	8,616	8,616
Cold Startup	36,000	36,000	36,000
Contingency	2,000	2,000	2,000
Total OPC	**46,616**	**46,616**	**46,616**
Contingency, OPC	*2,000*	*2,000*	*2,000*
Total Project Cost	**529,000**	**529,000**	**529,000**
Total Contingency (TEC+OPC)	***145,272***	***145,267***	***145,267***

[a] NNSA is resequencing equipment demolitions and how they may influence the baseline cost profile. Updates to the D&D estimate have not been made due to this evaluation.

30 Base Equipment Installation (30B) Subproject (21-D-512-02)

($K)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	120,449	204,894	204,894
Federal Design Support	0	0	0
Contingency	0	0	0
Total Design	**120,449**	**204,894**	**204,894**
Construction			
Site Work	58,867	41,553	41,552
Equipment	51,483	38,166	38,166
Construction	849,189	729,248	729,249
Federal Design Support	40,000	40,000	40,000
Contingency	398,158	419,193	419,193
Total Construction	**1,397,697**	**1,268,160**	**1,268,160**
Total Estimated Cost (TEC)	**1,518,146**	**1,473,054**	**1,473,054**
Contingency, TEC	***398,158***	***419,193***	***419,193***
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Activities	27,596	27,596	27,596
Startup	297,427	267,533	363,476
Contingency	20,957	95,943	0
Total OPC	**345,980**	**391,072**	**391,072**
Contingency, OPC	*20,957*	*95,943*	*0*
Total Project Cost	**1,864,126**	**1,864,126**	**1,864,126**
Total Contingency (TEC+OPC)	***419,115***	***515,136***	***419,193***

30 Reliable Equipment Installation (30R) Subproject (21-D-512-03)

($K)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	183,848	183,848	N/A
Federal Design Support	9,490	9,490	N/A
Contingency	42,856	42,856	N/A
Total Design	**236,194**	**236,194**	**N/A**
Construction			
Site Work	0	0	N/A
Equipment	98,414	98,414	N/A
Construction	796,176	796,176	N/A
Federal Design Support	22,458	22,458	N/A
Contingency	1,172,623[a]	452,809	N/A
Total Construction	**2,089,671**	**1,369,857**	**N/A**
Total Estimated Cost (TEC)	**2,325,865**	**1,606,051**	**N/A**
Contingency, TEC	***1,215,479***	***495,665***	***N/A***
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Activities	10,755	10,755	N/A
Startup	102,972	102,972	N/A
Contingency	36,971	36,971	N/A
Total OPC	**150,698**	**150,698**	**0**
Contingency, OPC	*36,971*	*36,971*	*N/A*
Total Project Cost	**2,476,563**	**1,756,749**	**N/A**
Total Contingency (TEC+OPC)	***1,252,450***	***532,636***	***N/A***

[a] The contingency was increased to account for higher than estimated 30R forecasted values.

Training and Development Center (TDC) Subproject (21-D-512-04)

($K)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	64,332	51,923	N/A
Federal Design Support	3,885	3,885	N/A
Contingency	15,540	15,377	N/A
Total Design	**83,757**	**71,185**	**N/A**
Construction			
Site Work	30,600	30,600	N/A
Equipment	40,000	40,000	N/A
Construction	143,642	167,606	N/A
Federal Design Support	6,475	6,475	N/A
Contingency	87,266	87,266	N/A
Total Construction	**307,983**	**331,947**	**N/A**
Total Estimated Cost (TEC)	**391,740**	**403,132**	**N/A**
Contingency, TEC	***102,806***	***102,643***	***N/A***
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Activities	17,760	6,368	N/A
Startup	30,500	30,500	N/A
Contingency	10,000	10,000	N/A
Total OPC	**58,260**	**46,868**	**0**
Contingency, OPC	*10,000*	*10,000*	*N/A*
Total Project Cost	**450,000**	**450,000**	**N/A**
Total Contingency (TEC+OPC)	***112,806***	***112,643***	***N/A***

($K)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	15,000	15,000	N/A
Federal Design Support	923	923	N/A
Contingency	4,400	4,400	N/A
Total Design	**20,323**	**20,323**	**N/A**
Construction			
Site Work	8,800	8,800	N/A
Equipment	4,500	4,500	N/A
Construction	55,498	55,498	N/A
Federal Design Support	1,665	1,665	N/A
Contingency	25,374	25,374	N/A
Total Construction	**95,837**	**95,837**	**N/A**
Total Estimated Cost (TEC)	**116,160**	**116,160**	**N/A**
Contingency, TEC	***29,774***	***29,774***	***N/A***
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Activities	1,840	1,840	N/A
Startup	8,900	8,900	N/A
Contingency	3,100	3,100	N/A
Total OPC	**13,840**	**13,840**	**0**
Contingency, OPC	*3,100*	*3,100*	*N/A*
Total Project Cost	**130,000**	**130,000**	**N/A**
Total Contingency (TEC+OPC)	***32,874***	***32,874***	***N/A***

5. Schedule of Appropriations Requests

($K)

Request Year	Type	Prior Years	FY2023	FY 2024	FY 2025	FY2026	FY2027	FY2028	FY2029	Out Years	Total
FY 2020	TEC	N/A	N/A	N/A	N/A	N/A	N/A	0	0	N/A	N/A
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	0	0	N/A	N/A
	TPC	26,156	N/A	N/A	N/A	N/A	N/A	0	0	N/A	26,156
FY 2021	TEC	N/A	N/A	N/A	N/A	N/A	N/A	0	0	N/A	0
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	0	0	N/A	0
	TPC	602,156	500,000	450,000	200,000	200,000	N/A	0	0	N/A	1,952,156
FY 2022	TEC	506,000	N/A	N/A	N/A	N/A	N/A	0	0	2,985,000	3,491,000
	OPC	100,000	N/A	N/A	N/A	N/A	N/A	0	0	274,000	374,000
	TPC	606,000	N/A	N/A	N/A	N/A	N/A	0	0	3,259,000	3,865,000
FY 2023	TEC	571,000	547,234	617,000	593,160	563,515	305,000	0	0	12,300	3,209,209
	OPC	65,000	41,000	53,000	66,840	61,485	60,000	0	0	42,000	389,325
	TPC	636,000	588,234	670,000	660,000	625,000	365,000	0	0	54,300	3,598,534
FY 2024	TEC	564,084	447,234	617,000	591,271	521,120	665,139	674,933	0	0	4,080,781
	OPC	71,916	141,000	53,000	88,870	188,880	50,361	55,067	0	0	649,094
	TPC	636,000	588,234	670,000	680,141	710,000	715,500	730,000	0	0	4,729,875
FY 2025	TEC	564,084	439,234	617,000	381,130	626,212	850,139	853,307	503,189	0	4,834,295
	OPC	71,916	149,000	53,000	88,870	143,788	50,361	51,693	6,766	0	615,394
	TPC	636,000	588,234	670,000	470,000	770,000	900,500	905,000	509,955	0	5,449,689

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	4Q FY 2032
Expected Useful Life (number of years)	50
Expected Future Start of D&D of this capital asset (fiscal quarter)	4Q FY 2082

Related Funding Requirements
(Budget Authority in Millions of Dollars)

	Annual Costs		Life Cycle Costs[a]	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations and Maintenance	$88	$88	$9,800	$9,800

7. D&D Information

The scope parameters established at CD-1 established the necessary site infrastructure improvements (West Entry Control Facility, Training and Development Center, temporary warehouse, material staging and laydown area, etc.) to support establishing a 30 ppy mission and to enable increased construction capacity, risk mitigation, and project efficiency.

These activities will include an increase in site square footage and the D&D of equipment within existing facilities. The D&D of existing facilities are not funded on this project. PF-4 D&D is not part of the LAP4 project scope. Some removal of contaminated equipment in PF-4 for space reuse will occur using project funds.

[a] Life cycle costs associated with this project were developed as part of CD-1 and estimate updates to the operation and maintenance costs will be made as fabrication and installation progress occurs and market conditions adjust over time. Neither the Plutonium Pit Production Analysis of Alternatives (AoA) nor Plutonium Pit Production Engineering Assessment (EA) evaluated life cycle costs of reaching 30 ppy at LANL separately from reaching the full 80 ppy production rate for various LANL options.

Gross Square Footage Created/Eliminated	WECF Square Feet	TDC Square Feet	Temporary Warehouse Square Feet
New area to be constructed by this project at Los Alamos National Laboratory…….	32,000	130,000	80,000
Area of D&D in this project at Los Alamos National Laboratory	0	0	0
Area at Los Alamos National Laboratory to be transferred, sold, and/or D&D outside the project including area previously "banked"……	32,000	130,000	80,000
Area of D&D in this project at other sites	0	0	0
Area at other sites to be transferred, sold, and/or D&D outside the project including area previously "banked	0	0	0
Total area eliminated ……..	0	0	0

8. Acquisition Approach

Expansion of pit production capacity at LANL will be accomplished with the installation of systems of gloveboxes and equipment. Equipment installation to provide the capability to produce 10 ppy will be accomplished using program funding in the Plutonium Modernization Program. NNSA led glovebox efforts such as the Matrixed Execution Team (MET) and Interface meetings continue to drive the prioritization, integration, and coordination of critical glovebox fabrications across the complex and within the supply chain. The installation of equipment to produce more than 10 ppy will be accomplished through this project. The LANL management and operating (M&O) contractor will execute design, and construction will be implemented with cleared and accomplished by the LANL craft resources. Subcontract installation of equipment is not feasible within PF-4, due to concurrent operational activities and the requisite security and safety restraints. The performance baselines for each subproject will be established upon completion of 90% design maturity, to allow development of credible cost estimates in accordance with DOE O 413.3B and NNSA policy.

For infrastructure, non-nuclear design and construction will be executed via M&O-issued design-bid-build and design-build construction contracts. The performance baselines for each subproject will be established using a graded approach for design maturities appropriate for the various facility types, and to allow development of credible cost estimates in accordance with DOE O 413.3B and NNSA policy.

15-D-302, TA-55 Reinvestment Project (TRP) Phase III
Los Alamos National Laboratory (LANL), Los Alamos, New Mexico
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary: The FY 2025 Request for the TA-55 Reinvestment Project Phase III is $39,475,000. The TEC baseline is $188,887,000 and the Total Project Cost (TPC) baseline is $236,030,000. Additional project funding has been applied in FY2025, increasing the estimated total cost of the project to $251M. The Congressional Control level for this project is TEC.

Significant Changes:

The TA-55 Reinvestment Project was initiated in FY 2005 and subsequently split into three phases.

The FY 2025 Construction Project Data Sheet (CPDS) is an update from FY 2024 and does not include a new start for the budget year. The most recent Critical Decision (CD) for the project is a combined CD-1/2/3 to approve the alternative selection, performance baseline, and authorization of construction which was approved on May 6, 2021. FY 2025 funding will be used to continue construction. The pace at which construction and turnover to operations can be executed is limited by the work being performed in an operating nuclear facility that is required to support critical program deliverables during the execution of this project.

The Baseline is reflective of CD-1/2/3 package and consistent with the scope selection from the Federal Analysis of Alternatives (AoA), final design, lessons learned, and input from the Independent Cost Estimate and External Independent Reviews.

A Federal Project Director, level 3 has been appointed to this project.

In FY 2024, the TRP III project is installing conduit, wire, and devices within the nuclear and balance of plant scopes of work but is currently experiencing cost and schedule impacts based on issues of craft availability and productivity as NNSA and LANL prioritize resources to support mission execution. The project is unable to acquire sufficient, qualified, and cleared staff to execute the work as planned or according to the updated recovery schedule established in August 2023. The project has been unable to obtain the required electricians identified in the original recovery schedule, with NNSA and LANL prioritizing other projects in PF-4 (e.g., LAP4). This continues to slow TRP III's performance. Project subcontracted work occurring outside of PF-4 is experiencing better staffing and productivity and is not driving the critical path. Labor availability issues are not expected to resolve until other higher priority infrastructure upgrades are completed, and the available resources are applied to TRP III. Based on these factors, additional project funding has been applied in FY 2025, increasing the estimated total cost to complete the project to $251M. This represents a 6% increase in the project cost. The potential schedule delay remains at 0 to 1 year. Recognizing the difficulty of working within PF-4, the project included considerable schedule margin in the original baseline. The Federal Project Director is still evaluating how these impacts might affect the performance baseline. Any performance baseline updates will be incorporated into the FY 2026 CPDS, should they be required.

Critical Milestone History[a]

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2015	03/23/2005		1Q FY 2015	4Q FY 2017	2Q FY 2018	2Q FY 2018	N/A	4Q FY 2022
FY 2016	03/23/2005	12/23/2014	4Q FY 2016	4Q FY 2018	2Q FY 2018	4Q FY 2018	N/A	3Q FY 2026
FY 2017	03/23/2005	12/23/2014	4Q FY 2016	4Q FY 2018	2Q FY 2018	4Q FY 2018	N/A	4Q FY 2025
FY 2021	03/23/2005	11/15/2018	3Q FY 2021	3Q FY 2021	4Q FY 2020	3Q FY 2021	2Q FY 2024	2Q FY 2026
FY 2022	03/23/2005	11/15/2018	5/06/2021	5/06/2021	1/22/2021	5/06/2021	2Q FY 2025	3Q FY 2027
FY 2023	03/23/2005	11/15/2018	5/06/2021	5/06/2021	1/22/2021	5/06/2021	2Q FY 2025	3Q FY 2027
FY 2024	03/23/2005	11/15/2018	5/06/2021	5/06/2021	1/22/2021	5/06/2021	2Q FY 2025	3Q FY 2027
FY 2025	03/23/2005	11/15/2018	5/06/2021	5/06/2021	1/22/2021	5/06/2021	2Q FY 2025	3Q FY 2027

CD-0 – Approve Mission Need
Conceptual Design Complete – Actual date the conceptual design was completed (if applicable)
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Project Performance Baseline
Final Design Complete – Estimated/Actual date the project design will be/was complete(d)
CD-3 – Approve Start of Construction/Execution
D&D Complete – Completion of D&D work (see Section 9)
CD-4 – Approve Start of Operations or Project Completion

Project Cost History[b]

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2015	30,062	110,000	140,062	29,500	N/A	29,500	169,562
FY 2016	30,060	150,002	180,062	46,500	N/A	46,500	226,562
FY 2017	30,060	111,448	141,508	31,500	N/A	31,500	173,008
FY 2021	35,628	155,104	190,732	34,658	12,808	47,466	238,198
FY 2022	22,435	166,452	188,887	44,778	2,365	47,143	236,030
FY 2023	19,184[c]	169,703	188,887	44,778	2,365	47,143	236,030
FY 2024	19,184	169,703	188,887	44,778	2,365	47,143	236,030
FY 2025	19,184	184,673	203,857	44,778	2,365	47,143	251,000

2. Project Scope and Justification

Scope

The TRP III scope encompasses replacing the currently outdated LANL Technical Area (TA)-55 fire alarm system that is not compliant with current codes and standards. Specifically, the existing detection, control, and evacuation devices associated with the fire alarm system are not National Fire Protection Association (NFPA) or Americans with Disabilities Act (ADA) compliant and are not Underwriters Laboratories (UL) listed. All major components of the system are obsolete and difficult

[a] Critical milestone history reflects no milestones in FY 2018, FY 2019 and FY 2020 since no CPDS or budget requests were submitted in these years.
[b] Project cost history reflect no values in FY 2018, FY 2019 and FY 2020 since no CPDS or budget requests were submitted in these years.
[c] TEC design activities were completed for $3.251 million less than the baselined value $22.435 million. The budget under-run was reallocated to Federal construction contingency during the implementation of the performance baseline.

to maintain. Spare part availability has continued to be a significant concern as circuit boards for the main fire alarm control panel are no longer available.

The current single fire alarm control panel will be replaced with multiple panels; separating the nuclear facility, Plutonium Facility (PF)-4, and the non-nuclear facilities within the TA-55 site. The scope also includes addition of area-wide and early warning fire detection throughout PF-4, installation of Underwriter Laboratory (UL) listed digital/addressable components, sprinkler flow sensing switches, new evacuation strobes and audible alarms, consolidated monitoring of the campus in the TA-55 Operations Center, and other components to provide inputs from over 2,000 devices spread throughout 199 zones of protection in TA-55. All new systems must be installed and accepted into operation while existing systems continue to provide alarm functions for the operating facility.

Upon completion of the new system, the project includes decommissioning and decontamination of components of the old systems. Demolition involves appropriate radiation protection and waste management characterization of the areas and parts to be removed.

Justification

PF-4 within TA-55 is the only Hazard Category 2 (HC-2) nuclear facility/Security Category 1 (SC-1) supporting all enduring Plutonium missions for Department of Energy (DOE)/NNSA at this time. The mission need for TRP III is to extend the life of TA-55 so it can continue to operate safely and reliably in support of the stockpile stewardship program. This project specifically extends the life of TA-55 by recapitalizing and revitalizing an aging and obsolete fire alarm system.

The TA-55 main fire control panel and supporting devices represent a single point failure risk for this critical capability. More specifically, this facility is critical to support certification of the stockpile, pit production, and all other DOE/NNSA plutonium missions. PF-4 has been in operation for over 35 years and, before the TRP I and TRP II upgrades, the infrastructure and systems were aging and approaching the end of their service life, required excessive maintenance, and experienced increased operating costs and reduced system reliability. The facility is not in compliance with safety and National Fire Protection Association regulatory requirements that are required for the fire alarm systems. TRP III is the final phase of the three-phase project that supports critical upgrades of PF-4 within the TA-55 boundary at LANL.

Portions of the funds appropriated under this data sheet may be used for contracted support services to the Federal Project Director to conduct independent assessments of the planning and execution of this project required by DOE Order 413.3B and to conduct technical reviews of design and construction documents.

The project is being conducted in accordance with the project management requirements in DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*.

Key Performance Parameters (KPPs)

The Threshold KPPs, represent the minimum acceptable performance that the project must achieve. Achievement of the Threshold KPPs will be a prerequisite for approval of CD-4, Project Completion. The Objective KPPs represent the desired project performance.

Performance Measure[a]	Threshold KPP	Objective KPP
New PF-4 fire alarm system (FAS)	**T1:** New FAS is installed and accepted into operations for PF-4	**O1:** New FAS is installed and accepted into operations for Balance of Plant
	T2: All data points cutover from old system to the new system as required per baseline design	**O2:** All Balance of Plant data points cutover from old system to the new system as required per baseline design

[a] Key Performance Parameters approved per CD-1/2/3.

3. Financial Schedule

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2013	0	0	0
FY 2014	0	0	0
FY 2015	16,062	16,062	0
FY 2016 [a]	6,373	8,192	0
FY 2017	0	0	0
FY 2018	0	0	0
FY 2019	0	0	1,503
FY 2020	0	-1,819	12,506
FY 2021 [b,c]	-3,251	-3,251	5,175
FY 2022	0	0	0
FY 2023	0	0	0
FY 2024	0	0	0
FY 2025	0	0	0
FY 2026	0	0	0
FY 2027	0	0	0
Total Design	**19,184**	**19,184**	**19,184**
Construction			
FY 2013	0	0	0
FY 2014	0	0	0
FY 2015	0	0	0
FY 2016	10,003	10,003	0
FY 2017	2,000	2,000	0
FY 2018	0	0	0
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	33,251 [d]	33,251	7,762

[a] In FY 2020 there was reprogramming of $1.82 million of the FY 2016 appropriation to the LANL TA-3 Substation replacement, 16-D-621.
[b] TEC design activities were completed for $3.251 million less than the baselined value $22.435 million. The budget under-run was reallocated to contingency per the performance baseline.
[c] Final design financial closeout was completed in the first quarter of FY 2022 that resulted in a cost reduction of $19 thousand. This reduction was applied against the FY 2021 appropriation.
[d] TEC reflected appropriation of $30 million plus funding reallocated at the completion of design - $3.251 million.

($K)

	Budget Authority (Appropriations)	Obligations	Costs
FY 2022	27,000	27,000	39,379
FY 2023	30,002	30,002	36,598
FY 2024	30,000	30,000	38,836
FY 2025	39,475	39,475	38,000
FY 2026	12,942	12,942	16,475
FY 2027	0	0	7,623
Total Construction	**184,673**	**184,673**	**184,673**
TEC			
FY 2013	0	0	0
FY 2014	0	0	0
FY 2015	16,062	16,062	0
FY 2016 [a]	16,376	18,195	0
FY 2017	2,000	2,000	0
FY 2018	0	0	0
FY 2019	0	0	1,503
FY 2020	0	-1,819	12,506
FY 2021	30,000	30,000	12,937
FY 2022	27,000	27,000	39,379
FY 2023	30,002	30,002	36,598
FY 2024 [b]	30,000	30,000	38,836
FY 2025	39,475	39,475	38,000
FY 2026	12,942	12,942	16,475
FY 2027	0	0	7,623
Total TEC	**203,857**	**203,857**	**203,857**
Other Project Costs (OPC)			
OPC except D&D			
FY 2013	1,675	1,675	1,675
FY 2014	750	750	750
FY 2015	1,802	1,802	1,802
FY 2016	133	133	133
FY 2017	828	828	828
FY 2018	3,596	3,596	3,596
FY 2019	1,804	1,804	1,775
FY 2020 [c]	500	500	-6

[a] In FY 2020 there was reprogramming of $1.82 million of the FY 2016 appropriation to the LANL TA-3 Substation replacement, 16-D-621.
[b] FY 2024 Budget Authority assumptions are based on the FY 2024 President's Budget Request.
[c] No OPC funding was provided in FY 2020. The required OPCs were added in FY 2022.

($K)

	Budget Authority (Appropriations)	Obligations	Costs
FY 2021	2,000	2,000	174
FY 2022	5,000	5,000	3,036
FY 2023	10,900	10,900	3,528
FY 2024	9,543	9,543	8,258
FY 2025	5,700	5,700	8,215
FY 2026	547	547	9,565
FY 2027	0	0	1,449
Total, OPC except D&D	44,778	44,778	44,778
OPC D&D			
FY 2013	0	0	0
FY 2014	0	0	0
FY 2015	0	0	0
FY 2016	0	0	0
FY 2017	0	0	0
FY 2018	0	0	0
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
FY 2023	100	100	0
FY 2024	2,265	2,265	1,000
FY 2025	0	0	1,365
FY 2026	0	0	0
FY 2027	0	0	0
Total, OPC D&D	2,365	2,365	2,365
Total OPC			
FY 2013	1,675	1,675	1,675
FY 2014	750	750	750
FY 2015	1,802	1,802	1,802
FY 2016	133	133	133
FY 2017	828	828	828
FY 2018	3,596	3,596	3,596
FY 2019	1,804	1,804	1,775
FY 2020	500	500	-6
FY 2021	2,000	2,000	174
FY 2022	5,000	5,000	3,036
FY 2023	11,000	11,000	3,528
FY 2024	11,808	11,808	9,258
FY 2025	5,700	5,700	9,580
FY 2026	547	547	9,565
FY 2027	0	0	1,449
Total, OPC	**47,143**	**47,143**	**47,143**

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Project Costs (TPC)			
FY 2013	1,675	1,675	1,675
FY 2014	750	750	750
FY 2015	17,864	17,864	1,802
FY 2016	16,509	18,328	133
FY 2017	2,828	2,828	828
FY 2018	3,596	3,596	3,596
FY 2019	1,804	1,804	3,278
FY 2020	500	-1,319	12,500
FY 2021	32,000	32,000	13,111
FY 2022	32,000	32,000	42,415
FY 2023	41,002	41,002	40,070
FY 2024	41,808	41,808	48,094
FY 2025	45,175	45,175	47,580
FY 2026	13,489	13,489	26,040
FY 2027	0	0	9,128
Total TPC	**251,000**	**251,000**	**251,000**

4. Details of Project Cost Estimate

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	18,884	18,884	22,135
Federal Design Support	300	300	300
Contingency	0	0	0
Total Design [a]	**19,184**	**19,184**	**22,435**
Construction			
Construction	126,469 [b]	111,499	111,499
Federal Support	5,239	5,239	5,239
Contingency	52,965	52,965	49,714
Total Construction	**184,673**	**169,703**	**166,452**
Total Estimated Cost (TEC)	**203,857**	**188,887**	**188,887**
Contingency, TEC	*52,965*	*52,965*	*49,714*
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning	8,885	8,885	8885
Conceptual Design	1,668	1,668	1,668
Start-Up	9,405	9,405	9,405
Project Support	14,541	14,541	14,541
Federal Support	1,160	1,160	1,160
Contingency	9,119	9,119	9,119
Total, OPC except D&D	44,778	44,778	44,778
OPC D&D			
OPC D&D	2,365	2,365	2,365
Total, OPC D&D	2,365	2,365	2,365
Total OPC	**47,143**	**47,143**	**47,143**
Contingency, OPC	*9,119*	*9,119*	*9,119*
Total Project Cost	**251,000**	**236,030**	**236,030**
Total Contingency (TEC+OPC)	***62,084***	***62,084***	***58,833***

[a] TEC design activities were completed for $3.251 million less than the baselined value $22.435 million. The budget under-run was reallocated to Federal construction contingency during the implementation of the performance baseline.
[b] Construction value was increased in reaction to increasing project forecasted estimates. If a baseline change is processed to increase the Total Project Costs, the amount of construction and contingency necessary are subject to change.

5. Schedule of Appropriation Requests[a]

Request Year	Type	Prior Years	FY2023	FY 2024	FY 2025	FY2026	FY2027	FY2028	FY2029	Out Years	Total
FY 2015	TEC	140,062	0	0	0	0	0	0		0	140,062
	OPC	28,500	1,000	0	0	0	0	0		0	29,500
	TPC	168,562	1,000	0	0	0	0	0		0	169,562
FY 2016	TEC	140,062	20,000	15,000	5,000	0	0	0		0	180,062
	OPC	25,500	3,000	3,000	5,000	6,000	4,000	0		0	46,500
	TPC	199,116	23,000	18,000	10,000	6,000	4,000	0		0	226,562
FY 2017	TEC	109,508	32,000	0	0	0	0	0		0	141,508
	OPC	23,500	3,000	3,000	2,000	0	0	0		0	31,500
	TPC	133,008	35,000	3,000	2,000	0	0	0		0	173,008
FY 2021	TEC	66,257	30,000	30,000	30,000	34,475	0	0		0	190,732
	OPC	14,588	3,000	11,000	11,808	4,000	3,070	0		0	47,466
	TPC	80,845	33,000	41,000	41,808	38,475	3,070	0		0	238,198
FY 2022	TEC	64,437	27,000	TBD	TBD	TBD	TBD	TBD	TBD	97,450	188,887
	OPC	13,088	5,000	TBD	TBD	TBD	TBD	TBD	TBD	29,055	47,143
	TPC	77,525	32,000	TBD	TBD	TBD	TBD	TBD	TBD	126,505	236,030
FY 2023	TEC	64,438	27,000	30,002	30,000	34,474	2,000	0		0	187,914
	OPC	13,088	5,000	11,000	11,808	5,700	547	0		0	47,143
	TPC	77,526	32,000	41,002	41,808	40,174	2,547	0		0	235,057
FY 2024	TEC	91,438	30,002	30,000	34,475	2,000	0	0		0	187,915
	OPC	18,088	11,000	11,808	5,700	547	0	0		0	47,143
	TPC	109,526	41,002	41,808	40,175	2,547	0	0		0	235,058
FY 2025	TEC	91,438	30,002	30,000	39,475	12,942	0	0		0	203,857
	OPC	18,088	11,000	11,808	5,700	547	0	0		0	47,143
	TPC	109,526	41,002	41,808	45,175	13,489	0	0		0	251,000

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	3Q FY 2027
Expected Useful Life (number of years)	25 years
Expected Future Start of D&D of this capital asset (fiscal quarter)	3Q FY 2052

Related Funding Requirements
(Budget Authority in Millions of Dollars)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	**Current Total Estimate**	**Previous Total Estimate**	**Current Total Estimate**
Operations and Maintenance	N/A	N/A	N/A	N/A

[a] The decrease in the prior year TEC funding is the result of an FY 2020 reprogramming of $1.82 million of the FY 2016 appropriation to the LANL TA-3 Substation replacement 16-D-621.

7. D&D Information

There is no new area being constructed in this construction project, but the old system will be removed.

8. Acquisition Approach

The TRP III acquisition strategy assigns project execution to the LANL Management and Operating (M&O) Contractor. The final design was issued through a firm fixed price subcontract. Construction activities will be self-performed by the M&O Contractor for PF-4 scope and can be subcontracted for the Balance of Plant scope.

21-D-511, Savannah River Plutonium Processing Facility (SRPPF)
Savannah River Site (SRS), Aiken, South Carolina
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary:
The Fiscal Year (FY) 2025 Request for the Savannah River Plutonium Processing Facility (SRPPF) project is $1,200,000,000. Appropriations may be used for design, construction, or other project costs (OPC). The most recent Department of Energy (DOE) approved Critical Decisions (CD) for the project are:

- Utilities, Site Prep, and Infrastructure (USPI) Subproject (21-D-511-01) CD-3A, Approve Site Preparation, approved on December 21, 2023, by the Deputy Administrator for Defense Programs.
- Main Processing Building Subproject (21-D-511-02) CD-3C, Approve Long Lead Procurement, Site Preparation, and Early Construction, approved on November 20, 2023, by the Administrator.
- Administrative Building (ADMIN) Subproject (21-D-511-03) CD-2/3, Approve Performance Baseline and Start of Construction/Execution, approved on December 12, 2023, by the Deputy Administrator for Defense Programs.

CD-0, Approve Mission Need for the "Plutonium Modular Approach," was approved on November 25, 2015. The approved mission need established the requirement for a responsive infrastructure to meet plutonium pit production requirements. This data sheet has been updated to reflect the outcome from approved programmatic changes in the project's scope that have occurred since CD-1 approval, which is further described in the Significant Changes section below. The final performance baseline will be established at 90% design completion to support CD-2/3 approval in FY 2026. A Federal Project Director (Level IV) has been assigned to this project and has approved this Construction Project Data Sheet (CPDS).

NNSA completed the Plutonium Pit Production analysis of alternatives (AoA) in October 2017 and the follow-on Plutonium Pit Production Engineering Assessment (EA) in April 2018. Both efforts informed NNSA's selection of a preferred alternative on May 10, 2018, to continue to invest in Los Alamos National Laboratory (LANL) for the capability to produce 30 pits per year (ppy) in 2026, and to repurpose existing facilities at Savannah River Site to produce a capability of 50 ppy in 2030. Based on information developed to support the CD-1 approval, NNSA has determined that achieving the required 50 war reserve ppy production rate at the Savannah River Site in 2030 is not feasible. Establishing the required SRPPF pit production capacity as close as possible to 2030 remains a high-priority and is required for sustaining the effectiveness of the Nation's nuclear deterrent.

The scope, cost and schedule estimates approved at CD-1 include an estimated cost range of $6,900,000,000 to $11,100,000,000 and a CD-4 schedule range of 1st Quarter FY 2032 to 4th Quarter FY 2035. The design has not progressed far enough to update the project cost estimate that was submitted in the FY 2024 CPDS.

Significant Changes:
This CPDS is an update of the FY 2024 CPDS and is not a new start.

The FY 2024 appropriation and FY 2025 Request support preliminary and final design with an overall project CD-2/3 performance measurement baseline approval planned for 3rd Quarter FY 2026 (risk informed); continuation of the execution of the Administrative Building Subproject, a design/build for a construction and maintenance building; and provide support for the start of construction within the 226-F facility associated with the Main Process Building by continuing execution of long lead procurement and site preparation activities, i.e., CD-3Xs, for Dismantlement and Removal (D&R) of equipment and installed commodities in 226-F; preparation of the facility interior; long-lead procurements for gloveboxes/process equipment, bulk materials and balance of plant (BOP) equipment; and early site preparation for the Utilities, Site, and Infrastructure, High Fidelity Training and Operations Center, and Sandfilter and Fanhouse Subprojects.

Subproject descriptions are included in Section 2. The approved tailoring strategy includes the following subprojects:

- Utilities, Site Prep, and Infrastructure (USPI) Subproject (21-D-511-01)
- Main Process Buildings (MPB) Subproject (21-D-511-02)
- Administrative Building (ADMIN) Subproject (21-D-511-03)
- Safeguards and Security (S&S) Subproject (21-D-511-04)
- High Fidelity Training and Operations Center (HFTOC) Subproject (21-D-511-05)
- Sandfilter and Fanhouse (S&F) Subproject (21-D-511-06)

NOTE: Site preparations and long-lead procurements will be accomplished via CD-3X under applicable subprojects to optimize project schedule and help offset the delays in the completion of the designs for several subprojects. Prior to initiation of procurements or early site preparation, design/technical packages and individual point estimate-based performance measurement baselines will be developed, reviewed, and approved by the appropriate NNSA approval authority, aligned with the estimated total project cost (TPC) of each CD-3X to establish the basis for performance and resource management.

In FY 2023, the project established a Tiger Team focused on acceleration of mature design scopes of work that could be proposed as long lead procurement and site preparation packages, i.e., CD-3Xs, as described in the Critical Milestone section with forecasted approval dates. In FY 2025, the project will focus on completing design for the overall project by FY 2026, and the following construction activities will be continued: D&R of equipment and installed commodities in 226-F; preparation of facility interior by making the majority of new penetrations needed for equipment and commodity installation and removal of unneeded concrete structures and fire doors; procurement of long-lead gloveboxes/process and BOP equipment and materials; early preparation and installation for all temporary facilities, utilities (above and below ground) and other general temporary infrastructure necessary to support mobilization and onboarding of construction resources, storage / laydown of construction materials and equipment, shop / fabrication / work areas, etc., to support initiation of SRPPF construction activities; and, final site work including installation of buried process support utilities and a waste transfer line, and demolition and removal of any unneeded Mixed Oxide Fuel Fabrication Facility (MFFF) support buildings (temporary and some permanent), and final roadways and grading.

The project team continued to finalize the preliminary design associated with the single line option (SLO) for process operations and in parallel developed a detailed, more risk-informed design performance baseline (DPB), aligned to Program Requirements Document (PRD) Revision 3. The PRD Revision 3, issued in January 2022, included NNSA requirements changes incorporating additional process utilities in unoccupied white space in the main process building and including additional process gloveboxes and utilities in the High-Fidelity Training and Operations Center. The change to a High-Fidelity Training and Operations Center (HFTOC) resulted in providing similar gloveboxes to those intended for the process building, which would help to improve the overall schedule for Weapons Design Agency War Reserve Authorization after approval of CD-4, Project Completion.

The DPB scope and cost were submitted to NNSA in May 2022, but in June 2022, an additional NNSA requirements change was identified in response to a Weapons Design Agency identified risk associated with process equipment single point failures and resulting throughput impacts. In October 2022, NNSA directed the M&O to award a construction management (CM) subcontract to an Engineering, Procurement and Construction (EPC) firm to complete the SRPPF Project through CD-4. In December 2022, an updated tailoring strategy was presented to and approved by the Chief Executive for Project Management, authorizing a sixth subproject and delegation of Project Management Executive (PME) authority as allowed and defined by DOE O 413.3B. These additional changes to the project resulted in the need for an updated DPB which was submitted by the M&O contractor for NNSA review in April 2023. NNSA Acquisition and Project Management Office (APMO) review of the April 2023 DPB completed in June and NNSA directed the M&O contractor to implement the BCP to utilize for DPB management and performance reporting purposes.

As submitted, the April 2023 DPB BCP confirms the NNSA projection included in the FY2024 CPDS: a risk informed design cost increase of approximately $1 billion, and a risk informed estimate of up to a one year schedule delay for design completion. The potential cost and schedule impact to design at the total project level has primarily been represented in this CPDS as an increase shown in the Design subsection of the MPB subproject Financial Schedule table, with the intent that the FY 2026 CPDS will include more accurate representation of impacts to the design funding needs and expected design costs at the subproject level for FY 2025 and FY 2026. However, given the ongoing review of multiple cost estimates

for the project, the FY 2025 CPDS reflects TBDs beyond the FY 2025-2029 FYNSP planning window. The project team, relevant NNSA offices, and NNSA and DOE leadership need additional time to analyze and integrate these estimates to provide a defensible estimate.

The Critical Milestone History tables have been updated to reflect the risk informed overall project design now being forecasted for 2Q FY2026 and CD-2/3 in 3Q FY 2026. Some of these additional design costs are due to the scope added since CD-1, including items to alleviate single points of failure and include unassigned (white) space for future capabilities. The integration of process and BOP design has proven more difficult than expected, adding costs, and causing schedule delay. Difficulty attracting qualified designers (engineering staffing has been approximately 75% of the planned amount) created the need to offer incentives and is lengthening design time, increasing indirect costs. Additionally, impacts to cost and schedule have also been compounded by M&O contactor continued inability to meet forecast performance targets, which is a trend the construction management subcontractor is expected to address. Considering the projected increase in design costs, the added scope, and the cost increases and schedule delays being experienced by similar projects in the DOE complex, the potential impact on the SRPPF total project cost may result in a TPC range of approximately $18B - $25B, and the total project schedule extension of approximately 1 to 3 years.

NNSA continues to assess the impacts on the TPC and CD-4 date due to market conditions (e.g., tight labor market, supply chain delays, and construction escalation) and internal challenges (e.g., integration with aging infrastructure, site utility limitations, synchronization of multiple site projects and interfacing work fronts). Construction projects across the nation are experiencing continuing impacts and the Nuclear Security Enterprise is especially susceptible to market conditions due to the skills and clearances required of our designers and craft personnel and the small, domestic, specialty suppliers often required. The Uranium Processing Facility (UPF) at the Y-12 National Security Complex represents the best analog for SRPPF. UPF had finished foundation and considerable structural work before COVID, is a nuclear project being constructed outside a PIDAS, includes a main processing building and various support structures, will include extensive commissioning, but not the introduction of nuclear material before completion, and is of similar scale.

To mitigate these impacts, NNSA has divided the project into six subprojects and identified additional long lead procurement / site preparation scopes of work, i.e., CD-3Xs, to allow procurement to occur earlier (gloveboxes and bulk material) to avoid late delivery, and to start additional site preparation scopes of work earlier than possible if waiting for the full project to be designed. These scopes of early work are focused on decreasing work area conflicts on the site and decreasing the number of peak craft needed. In calendar year 2023 further progress was made to authorize early work scope execution: 1) the MPB Subproject CD-3C was approved on November 20, 2023, and 2) the USPI Subproject CD-3A was approved December 21, 2023. Additionally, the ADMIN Subproject combined CD-2/3 was approved on December 12, 2023, at a TPC $92.3M with a CD-4 completion of 3Q FY2027. The approved TPC was above the high end TPC range value of $80M estimated for this Subproject at CD-1 primarily due to a procurement warehouse being added to the scope which will help support other near term long lead procurement actions targeted to begin execution. An additional measure initiated in FY 2024 to help mitigate potential glovebox vendor throughput capacity limitations that would present a challenge to meeting SRPPF glovebox needs is the Glovebox Manufacturing Expansion Initiative (GMEI). It is expected that $50 million of SRPPF funds will be used for investments in facility expansion and equipment modernization of glovebox vendor facilities to increase throughput capacity of Nuclear Quality Assurance (NQA-1) or International Organization for Standardization (ISO) 9001 nuclear gloveboxes needed for the project.

A Construction Management (CM) subcontract was awarded by the M&O to Fluor Federal Services Inc. (FFS) on September 28, 2023. The CM will be responsible for project delivery and bringing specialized construction and procurement expertise to the project.

A revised CD-1 estimate and schedule through CD-4 was developed based on current design maturity (~45% – 50%) and was submitted to NNSA for review at the end of February 2024. However, based on changes and conditions experienced to date for this and other NNSA projects, the FY 2025 FYNSP represents an increased funding request over the next five years with the expectation that the project total cost will be higher than the approved CD-1 high range TPC value of $11.1B. The Critical Milestone History and Project Cost History tables will be updated after DOE O 413.3B requirements associated with re-affirmation of the project's CD-1 cost and schedule range have been fulfilled and officially approved by the Project Management Executive. Until the approval of a revised CD-1 estimate range and schedule range is attained, the Critical

Milestone and Project Cost sections of this data sheet, including the long lead procurement and site preparation approvals, are placeholders. Updates with further refinement will be reflected in the FY 2026 submission of the CPDS.

The first of three 90% process design packages were submitted by the design subcontractor in January 2023 to the M&O DA for review. The final two 90% process design packages were submitted to the M&O DA in May 2023 and September 2023, respectively. An issue was identified during the 60% process design review associated with building airflow / exhaust. Further modeling and evaluation will be necessary to resolve this issue, which is expected to delay completion of 60% design. Additionally, project requirement changes necessary to address worker protection recommendations are being evaluated by the M&O and CM contractors and are expected to impact 60% and 90% design completion forecasts. Opportunities to mitigate further impacts to current total project TPC range forecast and CD-4 range forecasts described earlier in this section of the CPDS are also being evaluated. An initial project 60% design submittal, not including the resolved building airflow / exhaust and worker protection issues, is expected to be submitted from the design subcontractor in April 2024 to the M&O DA to allow the start of review. The finalized total project 60% design documents are anticipated to be submitted in July 2024 and included in the design review. Once the total project 60% design has been submitted, the pre-60% design maturity bottom-up estimate (BUE) submitted in February 2024 would be updated to reflect 60% design-based cost and schedule estimates through CD-4, anticipated to be submitted for NNSA review two – three months after completion of the 60% design review.

Critical Milestone History

Overall Project (21-D-511-01 through 21-D-511-06)

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2021	11/25/2015	4Q FY 2020	2Q FY 2021	TBD	TBD	TBD	4Q FY 2026 - 4Q FY 2031[a]
FY 2022	11/25/2015	3Q FY 2021	3Q FY 2021	TBD	TBD	TBD	1Q FY 2032 - 4Q FY 2035
FY 2023	11/25/2015	06/25/2021	06/25/2021	1Q FY 2024	4Q FY 2023	1Q FY 2024	1Q FY 2032 - 4Q FY 2035
FY 2024	11/25/2015	06/25/2021	06/25/2021	3Q FY 2025	2Q FY 2025	3Q FY 2025	1Q FY 2032 - 4Q FY 2035[b]
FY 2025	11/25/2015	06/25/2021	06/25/2021	3Q FY 2026	2Q FY 2026	3Q FY 2026	1Q FY 2032 - 4Q FY 2035[b]

Utilities, Site Prep, and Infrastructure (USPI) Subproject (21-D-511-01)

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2022	11/25/2015	3Q FY 2021	3Q FY 2021	TBD	TBD	TBD	TBD
FY 2023	11/25/2015	06/25/2021	06/25/2021	2Q FY 2023	1Q FY 2023	2Q FY 2023	2Q FY 2030
FY 2024	11/25/2015	06/25/2021	06/25/2021	3Q FY 2025	2Q FY 2025	3Q FY 2025	2Q FY 2030
FY 2025	11/25/2015	06/25/2021	06/25/2021	4Q FY 2025	3Q FY 2025	4Q FY 2025	2Q FY 2030

Fiscal Quarter or Date

Fiscal Year	USPI CD-3A	USPI CD-3B
FY 2022	3Q FY 2021	N/A
FY 2023	4Q FY 2022	N/A
FY 2024	4Q FY 2023	TBD
FY 2025	12/21/2023	2Q FY 2025

[a] CD-4 range was based on the *Plutonium Pit Production Engineering Assessment*

[b] CD-4 range reflects the range approved at CD-1.

Main Process Buildings (MPB) Subproject (21-D-511-02)

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2022	11/25/2015	3Q FY 2021	3Q FY 2021	TBD	TBD	TBD	TBD
FY 2023	11/25/2015	06/25/2021	6/25/2021	1Q FY 2024	4Q FY 2023	1Q FY 2024	1Q FY 2032 - 4Q FY 2035[a]
FY 2024	11/25/2015	06/25/2021	6/25/2021	3Q FY 2025	2Q FY 2025	3Q FY 2025	1Q FY 2032 - 4Q FY 2035[a]
FY 2025	11/25/2015	06/25/2021	6/25/2021	3Q FY 2026	2Q FY 2026	3Q FY 2026	1Q FY 2032 - 4Q FY 2035[a]

Fiscal Quarter or Date

Fiscal Year	MPB CD-3A	MPB CD-3C	MPB CD-3E	MPB CD-3F	MPB CD-3G	MPB CD-3H	MPB CD-3I
FY 2022	3Q FY 2021	N/A	N/A	N/A	N/A	N/A	N/A
FY 2023	4Q FY 2022	N/A	N/A	N/A	N/A	N/A	N/A
FY 2024	08/30/2022	4Q FY 2023	4Q FY 2023	1Q FY 2025	1Q FY 2025	1Q FY 2025	TBD
FY 2025	08/30/2022	11/20/2023	2Q FY 2024	1Q FY 2025	3Q FY 2025	1Q FY 2025	TBD

Administrative Building (ADMIN) Subproject (21-D-511-03)

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2022	11/25/2015	3Q FY 2021	3Q FY 2021	TBD	TBD	TBD	TBD
FY 2023	11/25/2015	06/25/2021	6/25/2021	2Q FY 2023	1Q FY 2023	2Q FY 2023	4Q FY 2030
FY 2024	11/25/2015	06/25/2021	6/25/2021	1Q FY 2024	1Q FY 2024	1Q FY 2024	2Q FY 2026
FY 2025	11/25/2015	06/25/2021	6/25/2021	12/12/2023	12/12/2023	12/12/2023	3Q FY 2027

Safeguards and Security (S&S) Subproject (21-D-511-04)

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2022	11/25/2015	3Q FY 2021	3Q FY 2021	TBD	TBD	TBD	TBD
FY 2023	11/25/2015	06/25/2021	6/25/2021	1Q FY 2024	3Q FY 2023	1Q FY 2024	3Q FY 2029
FY 2024	11/25/2015	06/25/2021	6/25/2021	3Q FY 2025	3Q FY 2025	3Q FY 2025	3Q FY 2029
FY 2025	11/25/2015	06/25/2021	6/25/2021	1Q FY 2026	4Q FY 2025	1Q FY 2026	3Q FY 2029

High Fidelity Training and Operations Center (HFTOC) Subproject (21-D-511-05)

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2022	11/15/2015	3Q FY 2021	3Q FY 2021	TBD	TBD	TBD	TBD
FY 2023	11/25/2015	06/25/2021	6/25/2021	2Q FY 2023	1Q FY 2023	2Q FY 2023	4Q FY 2028
FY 2024	11/25/2015	06/25/2021	6/25/2021	3Q FY 2025	3Q FY 2025	3Q FY 2025	4Q FY 2028
FY 2025	11/25/2015	06/25/2021	6/25/2021	4Q FY 2025	3Q FY 2025	4Q FY 2025	4Q FY 2028

[a] CD-4 range reflects the range approved at CD-1.

Fiscal Quarter or Date

Fiscal Year	HFTOC CD-3A	HFTOC CD-3B
FY 2024	1Q FY 2024	1Q FY 2025
FY 2025	1Q FY 2025	1Q FY 2025

Sandfilter and Fanhouse (S&F) Subproject (21-D-511-06)

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2024	11/25/2015	06/25/2021	6/25/2021	3Q FY 2025	3Q FY 2025	3Q FY 2025	1Q FY 2032 – 4Q FY 2035[a]
FY 2025	11/25/2015	06/25/2021	6/25/2021	3Q FY 2026	2Q FY 2026	3Q FY 2026	1Q FY 2032 – 4Q FY 2035[a]

Fiscal Quarter or Date

Fiscal Year	S&F CD-3A	S&F CD-3B
FY 2024	4Q FY 2023	1Q FY 2025
FY 2025	2Q FY 2024	1Q FY 2025

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range
Conceptual Design Complete – Actual date the conceptual design was completed (if applicable)
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
Final Design Complete – Estimated/Actual date the project design will be/was complete (d)
CD-3 – Approve Start of Construction
D&D Complete – Completion of Demolition and Disposal (D&D) work
CD-4 – Approve Start of Operations or Project Closeout

USPI Subproject (21-D-511-01) Long Lead Procurement and Site Preparation CD-3A – Site preparation and installation of all temporary facilities, utilities (above and below ground), other general temporary infrastructure necessary to support mobilization and onboarding of construction resources, i.e., storage / laydown of construction materials and equipment, shop / fabrication / work areas, etc., to support initiation of SRPPF construction activities. Final site work, including installation of buried process support utilities and a waste transfer line, demolition, and removal of any unneeded MFFF support buildings (temporary and some permanent), and final roadways/grading.

USPI Subproject (21-D-511-01) Site Preparation CD-3B – If needed, additional site preparation activities, including underground utilities to support USPI.

MPB Subproject (21-D-511-02) Long Lead Procurement and Site Preparation (Dismantle and Removal (D&R)) CD-3A – Dismantle and removal of equipment, partially installed commodities, and coatings from Building 226-F. Site preparation activities including temporary ventilation, temporary electrical, temporary communications, and site services contract support activities.

MPB Subproject (21-D-511-02) Site Preparation CD-3C – Site preparation activities, including structural demolition and removal of wall sections to facilitate installation of gloveboxes and process equipment to support MPB.

MPB Subproject (21-D-511-02) Long Lead Procurement CD-3E – Initial long lead procurement of gloveboxes and process equipment to support MPB.

[a] CD-4 range reflects the range approved at CD-1.

MPB Subproject (21-D-511-02) Long Lead Procurement CD-3F – Long lead procurement of bulk materials to support MPB.

MPB Subproject (21-D-511-02) Long Lead Procurement CD-3G – Long lead procurement of BOP equipment to support MPB.

MPB Subproject (21-D-511-02) Long Lead Procurement CD-3H – Second package of long lead procurement of gloveboxes and process equipment to support MPB.

MPB Subproject (21-D-511-02) Long Lead Procurement CD-3I – If needed, third package of long lead procurement of gloveboxes and process equipment to support MPB.

HFTOC Subproject (21-D-511-05) Site Preparation CD-3A – Site preparation activities for the HFTOC including underground utilities work and building modifications to support receipt and installation of future equipment.

HFTOC Subproject (21-D-511-05) Long Lead Procurement CD-3B – Long lead procurement of gloveboxes and equipment to support the HFTOC.

S&F Subproject (21-D-511-06) Site Preparation CD-3A – Site preparation activities for the sandfilter and fanhouse facilities that includes stormwater drainage relocation, sheet piling for sand filter excavation, sand filter and fan house excavation, and installation of the sand filter mudmat.

S&F Subproject (21-D-511-06) Site Preparation CD-3B – If needed, additional site preparation activities, including the base mat installation for the sandfilter.

Project Cost History

Overall Project (21-D-511-01 through 21-D-511-06)

($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Other	TEC, Total	OPC	OPC, Total	TPC
FY 2021	241,896	0	N/A	241,896	110,000	110,000	4,590,000[a]
FY 2022	TBD	TBD	TBD	TBD	TBD	TBD	11,100,000
FY 2023	1,550,896	6,779,766	589,104	8,919,766	2,180,234	2,180,234	11,100,000
FY 2024	1,686,388	6,629,274	604,104	8,919,766	2,180,234	2,180,234	11,100,000[b]
FY 2025	2,386,388	TBD	TBD	TBD	TBD	TBD	TBD

USPI Subproject (21-D-511-01)

($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Other	TEC, Total	OPC	OPC, Total	TPC
FY 2022	TBD	TBD	TBD	TBD	TBD	TBD	TBD
FY 2023	93,500	406,500	60,000	560,000	60,000	60,000	620,000
FY 2024	93,500	388,500	50,000	532,000	54,000	54,000	586,000
FY 2025	93,500	388,500	50,000	532,000	54,000	54,000	586,000

[a] TEC and OPC amounts reflect estimated costs for FY 2021 only, the TPC amount reflects the high end of the cost range developed during the *Plutonium Pit Production Engineering Assessment* (EA) in 2018.

[b] TPC amount reflects the high-end cost range developed for the CD-1 package.

MPB Subproject (21-D-511-02)

($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Other	TEC, Total	OPC	OPC, Total	TPC
FY 2022	TBD	TBD	TBD	TBD	TBD	TBD	TBD
FY 2023	1,318,896	5,704,766	441,104	7,464,766	1,935,234	1,935,234	9,400,000
FY 2024	1,454,388	5,297,274	441,104	7,192,766	1,866,234	1,866,234	9,059,000
FY 2025	2,154,388	TBD	TBD	TBD	TBD	TBD	TBD

ADMIN Subproject (21-D-511-03)

($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Other	TEC, Total	OPC	OPC, Total	TPC
FY 2022	TBD	TBD	TBD	TBD	TBD	TBD	TBD
FY 2023	5,500	46,500	6,000	58,000	22,000	22,000	80,000
FY 2024	5,500	46,500	6,000	58,000	22,000	22,000	80,000
FY 2025	5,500	73,700	12,000	91,200	2,000	2,000	93,200

S&S Subproject (21-D-511-04)

($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Other	TEC, Total	OPC	OPC, Total	TPC
FY 2022	TBD	TBD	TBD	TBD	TBD	TBD	TBD
FY 2023	100,000	360,000	60,000	520,000	110,000	110,000	630,000
FY 2024	100,000	360,000	60,000	520,000	110,000	110,000	630,000
FY 2025	85,000	375,000	60,000	520,000	110,000	110,000	630,000

HFTOC Subproject (21-D-511-05)

($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Other	TEC, Total	OPC	OPC, Total	TPC
FY 2022	TBD	TBD	TBD	TBD	TBD	TBD	TBD
FY 2023	33,000	262,000	22,000	317,000	53,000	53,000	370,000
FY 2024	33,000	262,000	22,000	317,000	53,000	53,000	370,000
FY 2025	48,000	247,000	22,000	317,000	53,000	53,000	370,000

S&F Subproject (21-D-511-06)

($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Other	TEC, Total	OPC	OPC, Total	TPC
FY 2024	NA[a]	275,000	25,000	300,000	75,000	75,000	375,000
FY 2025	NA[a]	TBD	TBD	TBD	TBD	TBD	TBD

2. Project Scope and Justification

Scope

The 21-D-511 project scope includes repurposing Building 226-F, including removal of previously installed equipment and support systems as necessary to accommodate the new pit production mission. Scope includes turnover of all necessary design and quality documentation from the previous mission, any required modifications to Building 226-F and the design,

[a] To create the S&F Subproject, scope is being transferred from the USPI and MPB subprojects. Due to maturity of overall project design development at the point in time that the S&F Subproject was authorized, it has been determined to complete design as planned and aligned to the original five subprojects. Attempting to break out remaining design scope specific to the S&F Subproject would not be clean and would unnecessarily delay design completion.

construction and installation of processing equipment, process support systems and buildings, utilities and security features for a capability to produce 50 ppy. The 21-D-511 project will also include transfer, stewardship, and incorporation of select MFFF project government property into the SRPPF project, conversion of the Building 226-2F warehouse building into a high-fidelity training facility, and design and construction of support facilities. Given the special nuclear material (SNM) expected during operations in the SRPPF, Building 226-F will be a Hazard Category 2, Security Category I facility.

The SRPPF approved tailoring strategy includes the following subprojects.

USPI Subproject (21-D-511-01): This subproject will include: early preparation and installation for all temporary facilities, utilities (above and below ground) and other general temporary infrastructure necessary to support mobilization and onboarding of construction resources, storage / laydown of construction materials and equipment, shop / fabrication / work areas, etc., to support initiation of SRPPF construction activities; and, final site work including installation of buried process support utilities and a waste transfer line, and demolition and removal of any unneeded MFFF temporary support buildings, and final roadways and grading.

MPB Subproject (21-D-511-02): The Main Process Building includes design, procurement, 226-F construction, including CD-3A removal of equipment, partially installed commodities, and coatings from 226-F, testing and start-up of structures, systems and components necessary to produce a minimum of 50 ppy, and upgrade a facility to house first shift of Protection Force safeguards and security staff for training and construction interface purposes during overall project construction.

ADMIN Subproject (21-D-511-03): The Administration Building Subproject will include design and construction of an approximately 50,000 square foot new Maintenance and Construction support building and an approximately 22,000 square foot procurement warehouse. This primary mission need is to provide office space for operational management and support personnel and procurement warehousing capacity. The Maintenance and Construction support building and procurement warehouse will be constructed early in the project schedule to allow for offices and management support during construction and start-up. The subproject will be integrated with the completion of the final phase of the Utilities, Site, and Infrastructure Subproject.

S&S Subproject (21-D-511-04): This subproject will include design and construction of entry control facilities, security fencing, reconfigure and remodel of Building 706-4F building for protective forces and other security infrastructure.

HFTOC Subproject (21-D-511-05): The High-Fidelity Training and Operations Center Subproject includes conversion of the building 226-2F warehouse building into a high-fidelity training facility, both classroom and hands-on equipment training. This high-fidelity training facility will contain nearly identical process gloveboxes and equipment lines for key processes, including balance of plant systems, to what will be installed in the main process building. This facility will provide the ideal location to perform cold development of future pit builds and train the future pit production workforce at SRS.

S&F Subproject (21-D-511-06): The Sandfilter and Fanhouse Subproject includes site preparation activities and the installation of the sandfilter and fanhouse facilities, with supporting utilities.

Justification

NNSA's ability to produce pits in the required quantities established by the Nuclear Weapons Council (NWC) is an essential component of the nuclear deterrent. An Independent AoA was conducted after CD-0, in accordance with the requirements of Office of Management and Budget (OMB) Circular A-11. Multiple alternatives were analyzed and the AoA identified two preferred alternatives with different construction approaches at two separate locations:

- Refurbishment and repurposing of facilities at the Savannah River Site; and,
- Additional footprint to accommodate pit production requirements at LANL.

The NNSA Office of Cost Estimating and Program Evaluation conducted a review of the AoA in October 2017 and recommended that further refinement of the preferred alternatives be completed before selecting an alternative that meets requirements. NNSA contracted with an independent architecture and engineering (A&E) firm to complete the follow-on Engineering Assessment to evaluate two preferred alternatives and two additional alternatives to better inform the

selection of an alternative and support conceptual design which was completed on April 20, 2018, along with a workforce analysis.

The NNSA Administrator selected a recommended alternative on May 10, 2018, to repurpose Building 226-F, a partially constructed facility at the SRS, for pit production to meet Department of Defense plutonium pit requirements by 2030. The selected alternative will continue to invest in LANL for the capability to produce 30 pits per year (ppy) in 2026, and to repurpose existing facilities at SRS to produce a capability of 80 ppy (both sites) during 2030. The Chairwoman of the Nuclear Weapons Council provided written certification to Congress regarding the NNSA's recommended alternative.

The project is being conducted in accordance with the project management requirements in DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets.* Funds appropriated under this project may be used for contracted support services to the Federal Project Director and to conduct independent reviews and oversight of design and construction for SRPPF.

Key Performance Parameters (KPPs)

KPPs will be finalized in support of CD-2 documentation, the preliminary KPPs below will be revised in support of CD-2.

Performance Measure[a]
226-F Dismantle and Removal (D&R): Complete dismantlement and removal of MFFF equipment and utility commodities in 226-F.
50 ppy Process and Equipment: Complete successful Operational Readiness Review including completion of integrated Cold System Testing and turnover of all 50 ppy facility, systems and components identified in the SRPPF Program Requirements Document (PRD) to Weapons Production for initiation of hot operations Process Prove-in activities.
Physical Safeguards and Security (S&S) Infrastructure: Complete successful S&S integrated systems and components testing and reconfiguration of 706-4F including project turnover in support of the 50 PPY SRPPF Process and Equipment Operational Readiness Review.
High Fidelity Training and Operations Center (HFTOC): High Fidelity Training and Operations Center will receive beneficial occupancy approval to allow utilization by the Project for Technology maturation and operational preparations with ultimate turnover to Plutonium Operations
SRPPF Infrastructure: Receive beneficial occupancy to support early project utilization and ultimate operations in accordance with the PRD.

3. Project Cost and Schedule

Financial Schedule

SRPPF funding will be appropriated at the Overall Project level (21-D-511) and be allocated to the subprojects shown in the tables below. NOTE: Tables reflect funding in outyears beyond CD-4 completion anticipated to be needed for project financial closeout.

[a] These Preliminary Key Performance Parameters were developed as part of the CD-1 package.

Overall Project (21-D-511-01 through 21-D-511-06)

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2021	241,896	241,896	29,870
FY 2022	359,000	359,000	316,421
FY 2023	470,000	470,000	467,442
FY 2024	495,000	495,000	623,202
FY 2025	590,492	590,492	549,453
FY 2026	230,000	230,000	400,000
Total Design	**2,386,388**	**2,386,388**	**2,386,388**
Construction			
FY 2022	100,000	100,000	0
FY 2023	700,000	700,000	83,289
FY 2024	342,985	342,985	384,670
FY 2025	567,508	567,508	678,467
FY 2026	1,172,750	1,172,750	1,003,063
FY 2027	1,545,000	1,545,000	1,519,386
FY 2028	1,307,875	1,307,875	1,604,000
FY 2029	1,386,979	1,386,979	1,522,375
FY 2030	TBD	TBD	TBD
FY 2031	TBD	TBD	TBD
FY 2032	TBD	TBD	TBD
FY 2033	TBD	TBD	TBD
FY 2034	TBD	TBD	TBD
FY 2035	TBD	TBD	TBD
Total Construction	**TBD**	**TBD**	**TBD**
TEC			
FY 2021	241,896	241,896	29,870
FY 2022	459,000	459,000	316,421
FY 2023	1,170,000	1,170,000	550,731
FY 2024	837,985	837,985	1,007,872
FY 2025	1,158,000	1,158,000	1,227,920
FY 2026	1,402,750	1,402,750	1,403,063
FY 2027	1,545,000	1,545,000	1,519,386
FY 2028	1,307,875	1,307,875	1,604,000
FY 2029	1,386,979	1,386,979	1,522,375
FY 2030	TBD	TBD	TBD
FY 2031	TBD	TBD	TBD
FY 2032	TBD	TBD	TBD
FY 2033	TBD	TBD	TBD
FY 2034	TBD	TBD	TBD
FY 2035	TBD	TBD	TBD
Total TEC	**TBD**	**TBD**	**TBD**

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2019	91,313	91,313	39,328
FY 2020	219,900	219,900	143,744
FY 2021	110,000	110,000	184,824
FY 2022	16,000	16,000	8,302
FY 2023	30,000	30,000	500
FY 2024	20,250	20,250	15,050
FY 2025	42,000	42,000	29,300
FY 2026	77,250	77,250	57,350
FY 2027	215,000	215,000	75,450
FY 2028	622,125	622,125	200,200
FY 2029	782,021	782,021	525,249
FY 2030	TBD	TBD	TBD
FY 2031	TBD	TBD	TBD
FY 2032	TBD	TBD	TBD
FY 2033	TBD	TBD	TBD
FY 2034	TBD	TBD	TBD
FY 2035	TBD	TBD	TBD
Total, OPC	**TBD**	**TBD**	**TBD**
Total Project Costs (TPC)			
FY 2019	91,313	91,313	39,328
FY 2020	219,900	219,900	143,744
FY 2021	351,896	351,896	214,694
FY 2022	475,000	475,000	324,723
FY 2023	1,200,000	1,200,000	551,231
FY 2024[a]	858,235	858,235	1,022,922
FY 2025	1,200,000	1,200,000	1,257,220
FY 2026	1,480,000	1,480,000	1,460,413
FY 2027	1,760,000	1,760,000	1,594,836
FY 2028	1,930,000	1,930,000	1,804,200
FY 2029	2,169,000	2,169,000	2,047,624
FY 2030	TBD	TBD	TBD
FY 2031	TBD	TBD	TBD
FY 2032	TBD	TBD	TBD
FY 2033	TBD	TBD	TBD
FY 2034	TBD	TBD	TBD
FY 2035	TBD	TBD	TBD
Total TPC	**TBD**	**TBD**	**TBD**

[a] FY 2024 Budget Authority assumptions are based on the FY 2024 President's Budget Request.

USPI Subproject (21-D-511-01)

($K)

USPI	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2021	5,000	5,000	741
FY 2022	87,500	87,500	37,259
FY 2023	1,000	1,000	7,857
FY 2024	0	0	42,643
FY 2025	0	0	5,000
FY 2026	0	0	0
Total Design	**93,500**	**93,500**	**93,500**
Construction			
FY 2022	20,000	20,000	0
FY 2023	58,000	58,000	0
FY 2024	66,000	66,000	72,000
FY 2025	80,000	80,000	76,000
FY 2026	80,000	80,000	71,500
FY 2027	80,000	80,000	86,000
FY 2028	50,000	50,000	82,000
FY 2029	4,500	4,500	29,000
FY 2030	0	0	10,500
FY 2031	0	0	8,000
FY 2032	0	0	3,500
FY 2033	0	0	0
FY 2034	0	0	0
FY 2035	0	0	0
Total Construction	**438,500**	**438,500**	**438,500**
TEC			
FY 2021	5,000	5,000	741
FY 2022	107,500	107,500	37,259
FY 2023	59,000	59,000	7,857
FY 2024	66,000	66,000	114,643
FY 2025	80,000	80,000	81,000
FY 2026	80,000	80,000	71,500
FY 2027	80,000	80,000	86,000
FY 2028	50,000	50,000	82,000
FY 2029	4,500	4,500	29,000
FY 2030	0	0	10,500
FY 2031	0	0	8,000
FY 2032	0	0	3,500
FY 2033	0	0	0
FY 2034	0	0	0
FY 2035	0	0	0
Total TEC	**532,000**	**532,000**	**532,000**

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
FY 2023	400	400	0
FY 2024	9,800	9,800	7,900
FY 2025	2,000	2,000	600
FY 2026	3,000	3,000	450
FY 2027	4,000	4,000	200
FY 2028	5,000	5,000	200
FY 2029	29,800	29,800	18,500
FY 2030	0	0	20,000
FY 2031	0	0	5,000
FY 2032	0	0	1,150
FY 2033	0	0	0
FY 2034	0	0	0
FY 2035	0	0	0
Total, OPC	**54,000**	**54,000**	**54,000**
Total Project Costs (TPC)			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	5,000	5,000	741
FY 2022	107,500	107,500	37,259
FY 2023	59,400	59,400	7,857
FY 2024	75,800	75,800	122,543
FY 2025	82,000	82,000	81,600
FY 2026	83,000	83,000	71,950
FY 2027	84,000	84,000	86,200
FY 2028	55,000	55,000	82,200
FY 2029	34,300	34,300	47,500
FY 2030	0	0	30,500
FY 2031	0	0	13,000
FY 2032	0	0	4,650
FY 2033	0	0	0
FY 2034	0	0	0
FY 2035	0	0	0
Total TPC	**586,000**	**586,000**	**586,000**

MPB (MPB) Subproject (21-D-511-02)

($K)

MPB	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2021	234,396	234,396	28,832
FY 2022	224,000	224,000	251,959
FY 2023	417,500	417,500	426,131
FY 2024	463,000	463,000	521,638
FY 2025	585,492	585,492	525,828
FY 2026	230,000	230,000	400,000
Total Design	**2,154,388**	**2,154,388**	**2,154,388**
Construction			
FY 2022	80,000	80,000	0
FY 2023	581,375	581,375	83,289
FY 2024	178,235	178,235	250,000
FY 2025	309,508	309,508	467,000
FY 2026	831,800	831,800	729,000
FY 2027	1,127,000	1,127,000	1,193,386
FY 2028	1,114,500	1,114,500	1,298,000
FY 2029	1,372,479	1,372,479	1,333,375
FY 2030	TBD	TBD	TBD
FY 2031	TBD	TBD	TBD
FY 2032	TBD	TBD	TBD
FY 2033	TBD	TBD	TBD
FY 2034	TBD	TBD	TBD
FY 2035	TBD	TBD	TBD
Total Construction	**TBD**	**TBD**	**TBD**
TEC			
FY 2021	234,396	234,396	28,832
FY 2022	304,000	304,000	251,959
FY 2023	998,875	998,875	509,420
FY 2024	641,235	641,235	771,638
FY 2025	895,000	895,000	992,828
FY 2026	1,061,800	1,061,800	1,129,000
FY 2027	1,127,000	1,127,000	1,193,386
FY 2028	1,114,500	1,114,500	1,298,000
FY 2029	1,372,479	1,372,479	1,333,375
FY 2030	TBD	TBD	TBD
FY 2031	TBD	TBD	TBD
FY 2032	TBD	TBD	TBD
FY 2033	TBD	TBD	TBD
FY 2034	TBD	TBD	TBD
FY 2035	TBD	TBD	TBD
Total TEC	**TBD**	**TBD**	**TBD**

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2019	91,313	91,313	39,328
FY 2020	219,900	219,900	143,744
FY 2021	110,000	110,000	184,824
FY 2022	16,000	16,000	8,302
FY 2023	27,100	27,100	0
FY 2024	6,200	6,200	5,000
FY 2025	22,000	22,000	18,000
FY 2026	50,000	50,000	35,000
FY 2027	176,000	176,000	45,000
FY 2028	529,625	529,625	140,000
FY 2029	683,721	683,721	453,749
FY 2030	TBD	TBD	TBD
FY 2031	TBD	TBD	TBD
FY 2032	TBD	TBD	TBD
FY 2033	TBD	TBD	TBD
FY 2034	TBD	TBD	TBD
FY 2035	TBD	TBD	TBD
Total, OPC	**TBD**	**TBD**	**TBD**
Total Project Costs (TPC)			
FY 2019	91,313	91,313	39,328
FY 2020	219,900	219,900	143,744
FY 2021	344,396	344,396	213,656
FY 2022	320,000	320,000	260,261
FY 2023	1,025,975	1,025,975	509,420
FY 2024	647,435	647,435	776,638
FY 2025	917,000	917,000	1,010,828
FY 2026	1,111,800	1,111,800	1,164,000
FY 2027	1,303,000	1,303,000	1,238,386
FY 2028	1,644,125	1,644,125	1,438,000
FY 2029	2,056,200	2,056,200	1,787,124
FY 2030	TBD	TBD	TBD
FY 2031	TBD	TBD	TBD
FY 2032	TBD	TBD	TBD
FY 2033	TBD	TBD	TBD
FY 2034	TBD	TBD	TBD
FY 2035	TBD	TBD	TBD
Total TPC	**TBD**	**TBD**	**TBD**

ADMIN Subproject (21-D-511-03)

($K)

ADMIN	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2021	500	500	49
FY 2022	2,500	2,500	2,451
FY 2023	2,500	2,500	1,579
FY 2024	0	0	1,421
FY 2025	0	0	0
FY 2026	0	0	0
Total Design	**5,500**	**5,500**	**5,500**
Construction			
FY 2022	0	0	0
FY 2023	0	0	0
FY 2024	33,750	33,750	17,670
FY 2025	41,000	41,000	50,467
FY 2026	10,950	10,950	12,563
FY 2027	0	0	5,000
FY 2028	0	0	0
FY 2029	0	0	0
FY 2030	0	0	0
FY 2031	0	0	0
FY 2032	0	0	0
FY 2033	0	0	0
FY 2034	0	0	0
FY 2035	0	0	0
Total Construction	**85,700**	**85,700**	**85,700**
TEC			
FY 2021	500	500	49
FY 2022	2,500	2,500	2,451
FY 2023	2,500	2,500	1,579
FY 2024	33,750	33,750	19,091
FY 2025	41,000	41,000	50,467
FY 2026	10,950	10,950	12,563
FY 2027	0	0	5,000
FY 2028	0	0	0
FY 2029	0	0	0
FY 2030	0	0	0
FY 2031	0	0	0
FY 2032	0	0	0
FY 2033	0	0	0
FY 2034	0	0	0
FY 2035	0	0	0
Total TEC	**91,200**	**91,200**	**91,200**

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
FY 2023	500	500	0
FY 2024	250	250	150
FY 2025	1,000	1,000	700
FY 2026	250	250	900
FY 2027	0	0	250
FY 2028	0	0	0
FY 2029	0	0	0
FY 2030	0	0	0
FY 2031	0	0	0
FY 2032	0	0	0
FY 2033	0	0	0
FY 2034	0	0	0
FY 2035	0	0	0
Total, OPC	**2,000**	**2,000**	**2,000**
Total Project Costs (TPC)			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	500	500	49
FY 2022	2,500	2,500	2,451
FY 2023	3,000	3,000	1,579
FY 2024	34,000	34,000	19,241
FY 2025	42,000	42,000	51,167
FY 2026	11,200	11,200	13,463
FY 2027	0	0	5,250
FY 2028	0	0	0
FY 2029	0	0	0
FY 2030	0	0	0
FY 2031	0	0	0
FY 2032	0	0	0
FY 2033	0	0	0
FY 2034	0	0	0
FY 2035	0	0	0
Total TPC	**93,200**	**93,200**	**93,200**

S&S Subproject (21-D-511-04)

($K)

S&S	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2021	1,000	1,000	124
FY 2022	20,000	20,000	14,376
FY 2023	35,000	35,000	9,954
FY 2024	24,000	24,000	44,500
FY 2025	5,000	5,000	16,046
FY 2026	0	0	0
Total Design	**85,000**	**85,000**	**85,000**
Construction			
FY 2022	0	0	0
FY 2023	0	0	0
FY 2024	5,000	5,000	0
FY 2025	27,000	27,000	10,000
FY 2026	75,000	75,000	60,000
FY 2027	210,000	210,000	125,000
FY 2028	118,000	118,000	120,000
FY 2029	0	0	120,000
FY 2030	0	0	0
FY 2031	0	0	0
FY 2032	0	0	0
FY 2033	0	0	0
FY 2034	0	0	0
FY 2035	0	0	0
Total Construction	**435,000**	**435,000**	**435,000**
TEC			
FY 2021	1,000	1,000	124
FY 2022	20,000	20,000	14,376
FY 2023	35,000	35,000	9,954
FY 2024	29,000	29,000	44,500
FY 2025	32,000	32,000	26,046
FY 2026	75,000	75,000	60,000
FY 2027	210,000	210,000	125,000
FY 2028	118,000	118,000	120,000
FY 2029	0	0	120,000
FY 2030	0	0	0
FY 2031	0	0	0
FY 2032	0	0	0
FY 2033	0	0	0
FY 2034	0	0	0
FY 2035	0	0	0
Total TEC	**520,000**	**520,000**	**520,000**

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
FY 2023	500	500	0
FY 2024	0	0	0
FY 2025	2,000	2,000	500
FY 2026	2,000	2,000	500
FY 2027	10,000	10,000	7,000
FY 2028	65,000	65,000	54,000
FY 2029	30,500	30,500	48,000
FY 2030	0	0	0
FY 2031	0	0	0
FY 2032	0	0	0
FY 2033	0	0	0
FY 2034	0	0	0
FY 2035	0	0	0
Total, OPC	**110,000**	**110,000**	**110,000**
Total Project Costs (TPC)			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	1,000	1,000	124
FY 2022	20,000	20,000	14,376
FY 2023	35,500	35,500	9,954
FY 2024	29,000	29,000	44,500
FY 2025	34,000	34,000	26,546
FY 2026	77,000	77,000	60,500
FY 2027	220,000	220,000	132,000
FY 2028	183,000	183,000	174,000
FY 2029	30,500	30,500	168,000
FY 2030	0	0	0
FY 2031	0	0	0
FY 2032	0	0	0
FY 2033	0	0	0
FY 2034	0	0	0
FY 2035	0	0	0
Total TPC	**630,000**	**630,000**	**630,000**

HFTOC Subproject (21-D-511-05)

($K)

HFTOC	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2021	1,000	1,000	124
FY 2022	25,000	25,000	10,376
FY 2023	14,000	14,000	21,921
FY 2024	8,000	8,000	13,000
FY 2025	0	0	2,579
FY 2026	0	0	0
Total Design	**48,000**	**48,000**	**48,000**
Construction			
FY 2022	0	0	0
FY 2023	1,000	1,000	0
FY 2024	20,000	20,000	10,000
FY 2025	60,000	60,000	35,000
FY 2026	120,000	120,000	80,000
FY 2027	68,000	68,000	70,000
FY 2028	0	0	74,000
FY 2029	0	0	0
FY 2030	0	0	0
FY 2031	0	0	0
FY 2032	0	0	0
FY 2033	0	0	0
FY 2034	0	0	0
FY 2035	0	0	0
Total Construction	**269,000**	**269,000**	**269,000**
TEC			
FY 2021	1,000	1,000	124
FY 2022	25,000	25,000	10,376
FY 2023	15,000	15,000	21,921
FY 2024	28,000	28,000	23,000
FY 2025	60,000	60,000	37,579
FY 2026	120,000	120,000	80,000
FY 2027	68,000	68,000	70,000
FY 2028	0	0	74,000
FY 2029	0	0	0
FY 2030	0	0	0
FY 2031	0	0	0
FY 2032	0	0	0
FY 2033	0	0	0
FY 2034	0	0	0
FY 2035	0	0	0
Total TEC	**317,000**	**317,000**	**317,000**

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
FY 2023	500	500	0
FY 2024	2,000	2,000	1,000
FY 2025	13,000	13,000	9,000
FY 2026	20,000	20,000	20,000
FY 2027	15,000	15,000	20,000
FY 2028	2,500	2,500	3,000
FY 2029	0	0	0
FY 2030	0	0	0
FY 2031	0	0	0
FY 2032	0	0	0
FY 2033	0	0	0
FY 2034	0	0	0
FY 2035	0	0	0
Total, OPC	**53,000**	**53,000**	**53,000**
Total Project Costs (TPC)			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	1,000	1,000	124
FY 2022	25,000	25,000	10,376
FY 2023	15,500	15,500	21,921
FY 2024	30,000	30,000	24,000
FY 2025	73,000	73,000	46,579
FY 2026	140,000	140,000	100,000
FY 2027	83,000	83,000	90,000
FY 2028	2,500	2,500	77,000
FY 2029	0	0	0
FY 2030	0	0	0
FY 2031	0	0	0
FY 2032	0	0	0
FY 2033	0	0	0
FY 2034	0	0	0
FY 2035	0	0	0
Total TPC	**370,000**	**370,000**	**370,000**

S&F Subproject (21-D-511-06)

($K)

SF & FH	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2021	0	0	0
FY 2022	0	0	0
FY 2023	0	0	0
FY 2024	0	0	0
FY 2025	0	0	0
FY 2026	0	0	0
Total Design	**0**	**0**	**0**
Construction			
FY 2022	0	0	0
FY 2023	59,625	59,625	0
FY 2024	40,000	40,000	35,000
FY 2025	50,000	50,000	40,000
FY 2026	55,000	55,000	50,000
FY 2027	60,000	60,000	40,000
FY 2028	25,375	25,375	30,000
FY 2029	10,000	10,000	40,000
FY 2030	TBD	TBD	TBD
FY 2031	TBD	TBD	TBD
FY 2032	TBD	TBD	TBD
FY 2033	TBD	TBD	TBD
FY 2034	TBD	TBD	TBD
FY 2035	TBD	TBD	TBD
Total Construction	**TBD**	**TBD**	**TBD**
TEC			
FY 2023	59,625	59,625	0
FY 2024	40,000	40,000	35,000
FY 2025	50,000	50,000	40,000
FY 2026	55,000	55,000	50,000
FY 2027	60,000	60,000	40,000
FY 2028	25,375	25,375	30,000
FY 2029	10,000	10,000	40,000
FY 2030	TBD	TBD	TBD
FY 2031	TBD	TBD	TBD
FY 2032	TBD	TBD	TBD
FY 2033	TBD	TBD	TBD
FY 2034	TBD	TBD	TBD
FY 2035	TBD	TBD	TBD
Total TEC	**TBD**	**TBD**	**TBD**

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
FY 2023	1,000	1,000	500
FY 2024	2,000	2,000	1,000
FY 2025	2,000	2,000	500
FY 2026	2,000	2,000	500
FY 2027	10,000	10,000	3,000
FY 2028	20,000	20,000	3,000
FY 2029	38,000	38,000	5,000
FY 2030	TBD	TBD	TBD
FY 2031	TBD	TBD	TBD
FY 2032	TBD	TBD	TBD
FY 2033	TBD	TBD	TBD
FY 2034	TBD	TBD	TBD
FY 2035	TBD	TBD	TBD
Total, OPC	**TBD**	**TBD**	**TBD**
Total Project Costs (TPC)			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
FY 2023	60,625	60,625	500
FY 2024	42,000	42,000	36,000
FY 2025	52,000	52,000	40,500
FY 2026	57,000	57,000	50,500
FY 2027	70,000	70,000	43,000
FY 2028	45,375	45,375	33,000
FY 2029	48,000	48,000	45,000
FY 2030	TBD	TBD	TBD
FY 2031	TBD	TBD	TBD
FY 2032	TBD	TBD	TBD
FY 2033	TBD	TBD	TBD
FY 2034	TBD	TBD	TBD
FY 2035	TBD	TBD	TBD
Total TPC	**TBD**	**TBD**	**TBD**

4. Details of Project Cost Estimate[a]

Overall Project (21-D-511-01 through 21-D-511-06)

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	2,115,492	1,515,492	N/A
Contingency	270,896	170,896	N/A
Total Design	**2,386,388**	**1,686,388**	**N/A**
Construction			
Site Preparation	TBD	495,000	N/A
Equipment	TBD	807,500	N/A
Construction	TBD	4,007,008	N/A
Contingency	TBD	1,319,766	N/A
Total Construction	**TBD**	**6,629,274**	**N/A**
Other TEC (if any)			
Cold Startup	TBD	436,104	N/A
Contingency	TBD	168,000	N/A
Total, Other TEC	TBD	604,104	N/A
Total Estimated Cost (TEC)	**TBD**	**8,919,766**	**N/A**
Contingency, TEC	***TBD***	***1,658,662***	***N/A***
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning & Design	300,000	300,000	N/A
Post CD-1 Costs	TBD	1,702,234	N/A
Contingency	TBD	178,000	N/A
Total OPC	**TBD**	**2,180,234**	**N/A**
Contingency, OPC	*TBD*	*178,000*	*N/A*
Total Project Cost	**TBD**	**11,100,000**	**N/A**
Total Contingency (TEC+OPC)	***TBD***	***1,836,662***	***N/A***

[a] The subprojects are pre-CD-2, so there are no validated baselines to include in the tables.

USPI Subproject (021-D-511-01)

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	85,000	85,000	N/A
Contingency	8,500	8,500	N/A
Total Design	**93,500**	**93,500**	**N/A**
Construction			
Site Preparation	20,000	20,000	N/A
Equipment	20,000	20,000	N/A
Construction	248,500	248,500	N/A
Contingency	100,000	100,000	N/A
Total Construction	**388,500**	**388,500**	**N/A**
Other TEC (if any)			
Cold Startup	40,000	40,000	N/A
Contingency	10,000	10,000	N/A
Total, Other TEC	50,000	50,000	N/A
Total Estimated Cost (TEC)	**532,000**	**532,000**	**N/A**
Contingency, TEC	***118,500***	***118,500***	***N/A***
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning & Design	0	0	N/A
Post CD-1 OPC Costs	46,000	46,000	N/A
Contingency	8,000	8,000	N/A
Total OPC	**54,000**	**54,000**	**N/A**
Contingency, OPC	*8,000*	*8,000*	*N/A*
Total Project Cost	**586,000**	**586,000**	**N/A**
Total Contingency (TEC+OPC)	***126,500***	***126,500***	***N/A***

MPB Subproject (21-D-511-02)

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	1,905,492	1,305,492	N/A
Contingency	248,896	148,896	N/A
Total Design	**2,154,388**	**1,454,388**	**N/A**
Construction			
Site Preparation	TBD	400,000	N/A
Equipment	TBD	700,000	N/A
Construction	TBD	3,132,508	N/A
Contingency	TBD	1,064,766	N/A
Total Construction	**TBD**	**5,297,274**	**N/A**
Other TEC (if any)			
Cold Startup	TBD	301,104	N/A
Contingency	TBD	140,000	N/A
Total, Other TEC	TBD	441,104	N/A
Total Estimated Cost (TEC)	**TBD**	**7,192,766**	**N/A**
Contingency, TEC	***TBD***	***1,353,662***	***N/A***
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning & Design	300,000	300,000	N/A
Post CD-1 OPC Costs	TBD	1,416,234	N/A
Contingency	TBD	150,000	N/A
Total OPC	**TBD**	**1,866,234**	**N/A**
Contingency, OPC	*TBD*	*150,000*	*N/A*
Total Project Cost	**TBD**	**9,059,000**	**N/A**
Total Contingency (TEC+OPC)	***TBD***	***1,503,662***	***N/A***

ADMIN Subproject (21-D-511-03)

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	5,000	5,000	5,000
Contingency	500	500	500
Total Design	**5,500**	**5,500**	**5,500**
Construction			
Site Preparation	7,250	5,000	7,250
Equipment	5,000	2,500	5,000
Construction	51,100	34,000	51,100
Contingency	10,350	5,000	10,350
Total Construction	**73,700**	**46,500**	**73,700**
Other TEC (if any)			
Cold Startup	10,000	5,000	10,000
Contingency	2,000	1,000	2,000
Total, Other TEC	12,000	6,000	12,000
Total Estimated Cost (TEC)	**91,200**	**58,000**	**91,200**
Contingency, TEC	***12,850***	***6,500***	***12,850***
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning & Design	0	0	0
Post CD-1 OPC Costs	1,750	20,000	1,750
Contingency	250	2,000	250
Total OPC	**2,000**	**22,000**	**2,000**
Contingency, OPC	*250*	*2,000*	*250*
Total Project Cost	**93,200**	**80,000**	**93,200**
Total Contingency (TEC+OPC)	***13,100***	***8,500***	***13,100***

S&S Subproject (21-D-511-04)

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	75,000	90,000	N/A
Contingency	10,000	10,000	N/A
Total Design	**85,000**	**100,000**	**N/A**
Construction			
Site Preparation	20,000	20,000	N/A
Equipment	20,000	20,000	N/A
Construction	255,000	240,000	N/A
Contingency	80,000	80,000	N/A
Total Construction	**375,000**	**360,000**	**N/A**
Other TEC (if any)			
Cold Startup	50,000	50,000	N/A
Contingency	10,000	10,000	N/A
Total, Other TEC	60,000	60,000	N/A
Total Estimated Cost (TEC)	**520,000**	**520,000**	**N/A**
Contingency, TEC	***100,000***	***100,000***	***N/A***
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning & Design	0	0	N/A
Post CD-1 OPC Costs	100,000	100,000	N/A
Contingency	10,000	10,000	N/A
Total OPC	**110,000**	**110,000**	**N/A**
Contingency, OPC	*10,000*	*10,000*	*N/A*
Total Project Cost	**630,000**	**630,000**	**N/A**
Total Contingency (TEC+OPC)	***110,000***	***110,000***	***N/A***

HFTOC Subproject (21-D-511-05)

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	45,000	30,000	N/A
Contingency	3,000	3,000	N/A
Total Design	**48,000**	**33,000**	**N/A**
Construction			
Site Preparation	20,000	20,000	N/A
Equipment	20,000	20,000	N/A
Construction	167,000	182,000	N/A
Contingency	40,000	40,000	N/A
Total Construction	**247,000**	**262,000**	**N/A**
Other TEC (if any)			
Cold Startup	20,000	20,000	N/A
Contingency	2,000	2,000	N/A
Total, Other TEC	22,000	22,000	N/A
Total Estimated Cost (TEC)	**317,000**	**317,000**	**N/A**
Contingency, TEC	***45,000***	***45,000***	***N/A***
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning & Design	0	0	N/A
Post CD-1 OPC Costs	50,000	50,000	N/A
Contingency	3,000	3,000	N/A
Total OPC	**53,000**	**53,000**	**N/A**
Contingency, OPC	*3,000*	*3,000*	*N/A*
Total Project Cost	**370,000**	**370,000**	**N/A**
Total Contingency (TEC+OPC)	***48,000***	***48,000***	***N/A***

S&F Subproject (21-D-511-06)

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total Design	**N/A**	**N/A**	**N/A**
Construction			
Site Preparation	TBD	30,000	N/A
Equipment	TBD	45,000	N/A
Construction	TBD	170,000	N/A
Contingency	TBD	30,000	N/A
Total Construction	**TBD**	**275,000**	**N/A**
Other TEC (if any)			
Cold Startup	TBD	20,000	N/A
Contingency	TBD	5,000	N/A
Total, Other TEC	**TBD**	**25,000**	**N/A**
Total Estimated Cost (TEC)	**TBD**	**300,000**	**N/A**
Contingency, TEC	***TBD***	***35,000***	***N/A***
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning & Design	0	0	N/A
Post CD-1 OPC Costs	TBD	70,000	N/A
Contingency	TBD	5,000	N/A
Total OPC	**TBD**	**75,000**	**N/A**
Contingency, OPC	*TBD*	*5,000*	*N/A*
Total Project Cost	**TBD**	**375,000**	**N/A**
Total Contingency (TEC+OPC)	***TBD***	***40,000***	***N/A***

5. Schedule of Appropriations Requests

($K)

Request Year	Type	Prior Years	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	Out Years	Total
FY 2021	TEC	241,896	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	OPC	436,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TPC	677,896	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FY 2022	TEC	686,896	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	OPC	451,213	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TPC	1,138,109	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9,961,891	11,100,000
FY 2023	TEC	700,896	670,000	828,235	984,508	1,001,339	877,000	1,100,000	450,000	2,307,788	8,919,766
	OPC	437,213	30,000	30,000	30,000	50,000	75,000	100,000	750,000	678,021	2,180,234
	TPC	1,138,109	700,000	858,235	1,014,508	1,051,339	952,000	1,200,000	1,200,000	2,985,809	11,100,000
FY 2024	TEC	700,896	1,170,000	828,235	1,070,000	1,150,000	1,125,000	1,130,500	450,000	1,295,135	8,919,766
	OPC	437,213	30,000	30,000	30,000	50,000	75,000	99,500	749,000	679,521	2,180,234
	TPC	1,138,109	1,200,000	858,235	1,100,000	1,200,000	1,200,000	1,230,000	1,199,000	1,974,656	11,100,000
FY 2025	TEC	700,896	1,170,000	837,985	1,158,000	1,402,750	1,545,000	1,307,875	1,386,979	TBD	TBD
	OPC	437,213	30,000	20,250	42,000	77,250	215,000	622,125	782,021	TBD	TBD
	TPC	1,138,109	1,200,000	858,235	1,200,000	1,480,000	1,760,000	1,930,000	2,169,000	TBD	TBD

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	1Q FY 2032 – 4Q FY 2035
Expected Useful Life (number of years)	50
Expected Future Start of D&D of this capital asset (fiscal quarter)	1Q FY 2082 – 4Q FY 2085

Related Funding Requirements

(Budget Authority in Millions of Dollars)

	Annual Costs		Life Cycle Costs[a]	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations and Maintenance	600	600	48,100	48,100

7. D&D Information

The SRPPF plutonium processing capability will be constructed within the existing partially completed 226-F building. This will require dismantlement and removal of previously installed MFFF equipment and support systems and facilities as necessary to accommodate the new plutonium production mission. Costs for dismantlement and removal of previously installed MFFF equipment will be part of the D&R Subproject.

8. Acquisition Approach

On May 10, 2018, in support of the CD-1, NNSA requested Savannah River (SR) M&O to lead the SRPPF CD-1 Conceptual Design development activities while leveraging the LANL M&O plutonium processing knowledge and ongoing project and operation activities. The SR M&O utilized a LANL subcontract with Merrick to provide the process conceptual design. The SR M&O utilized an affiliate sub-contract relationship with Fluor Inc., located in Greenville S.C., to provide design of the balance of plant systems. The SR M&O was responsible for the nuclear safety and ES&H system conceptual design development while relying on the Physical Security Center of Excellence (PSCOE) from Sandia National Laboratories for the physical security conceptual design.

In FY 2022, aligning with the CD-1 approved *Acquisition Strategy*, a change in the acquisition approach is being driven due to the DOE decision to extend the Savannah River M&O Contract through 2027 and the slippage in the SRPPF DPB design

[a] Current Life Cycle Costs and Annual Costs are based on an updated Life Cycle Cost Estimate performed in January 2021.

completion milestone. NNSA has directed the M&O contractor to solicit and award a Construction Management (CM) Contractor to assume all the Engineering, Procurement, and Construction (EPC) responsibilities. Until the award and transition of the new CM contractor, the SRS M&O will continue to manage the sole-source subcontracts with Merrick and Fluor and integrate the PSCOE design to complete the integrated SRPPF design. The SRS M&O and design partners will continue engaging qualified specialty equipment and materials suppliers early in design to improve the quality of design enabling optimum procurements and construction execution. The SRS M&O will be responsible for the project design's constructability and initiate any early construction critical decisions and follow-on execution. Once transition of the EPC activities is complete to the CM contractor, the SRS M&O's remaining responsibilities will be the Facility Design Authority (FDA) for the facility, the production equipment, balance of plant support systems, and nuclear safety and security systems. The SRS M&O is the operational authority and will ensure SRPPF includes operability, maintainability, and sustainability requirements that are flowed down, implemented, and controlled throughout the project execution. As the plutonium program and project integrator, the SRS M&O will be responsible for the program and operational assurance during design, procurement, construction, start-up and properly sequencing of the project operational readiness and transition. LANL will continue to support the FDA by providing process inputs and oversight for specialty process equipment. Lawrence Livermore National Laboratory will also support the FDA and serve as the Weapons Design Agency for the first pit type to be produced at SRS. The SRS M&O contract will include Contract Line-Item Numbers to execute NNSA capital line items at SRS to align the applicable requirements and appropriate incentives to optimize the project execution and completion.

The SRPPF project is continuing to look for opportunities to expedite the execution and have implemented concurrent review processes to support the technical, acquisition and project management submittal processes. Federal reviews are being executed in parallel with the contractor's independent team and management reviews. A consolidated comment resolution process is being implemented. The Contractor providing complete, quality submittals will be key to successful implementation and minimizing the Federal oversight and risk acceptance.

The SRPPF project continues to utilize lessons learned in acquisition and execution of similarly sized nuclear projects, including the execution of the Los Alamos Plutonium Pit Production Project and Y-12 Uranium Processing Facility Project. These lessons learned include:

- early long-lead material and engineered procurements, including gloveboxes, BOP equipment, and bulk materials; and
- early site preparation, to include D&R required to prepare existing SRS facilities for SRPPF CD-2/3 design and construction activities.
- Construction planning and productivity factors
- Testing, Start-up and Transition to Operations

The approved CD-1 package identified a multi-subproject construction execution approach. This acquisition approach is continuing to be refined as design matures, along with integration with the national supply chain. Within each subproject, where appropriate, a phasing approach will be applied that may include the following as necessary to optimize project schedule and cash flow:

- early site preparation and installation of temporary facilities / utilities necessary to enable construction mobilization, demolition and removal actions, long lead procurements (i.e., CD-3A);
- performance of independent and usable segments of project scope as subprojects utilizing a "phasing" tailoring strategy approach per DOE O 413.3B, (i.e., a phased subproject that would be managed under its own independent CD-2/3 and CD-4. This will be managed under the CD-1 cost and schedule range, prior to the final CD-2/3 and CD-4 for the overall project).

15-D-301 High Explosive Science and Engineering (HESE) Facility
Pantex Plant, Amarillo, Texas
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary: The FY 2025 Request for the High Explosive Science and Engineering (HESE) Facility is $15,000,000. The most recent DOE O 413.3B approved Critical Decisions (CD) are CD-3A, *Approve Site Preparation and Long Lead Procurement*, with a cost of $23,300,000 and an expected completion date of 3rd Quarter FY 2024 and CD-2/3, *Approve Performance Baseline and Start of Construction*, with a Total Project Cost (TPC) of $228,000,000 and a CD-4 date of November 2027. The construction contract awards occurred in April 2022.

The FY 2025 Request includes funds to continue the construction of the facility and to begin document preparation for the readiness assessment activities.

Funds in the HESE line-item are for TEC activities. Funding for OPCs is included in the High Explosives and Energetics program in FY 2025 and 2026.

Significant Changes:
This Construction Project Data Sheet (CPDS) is an update of the Fiscal Year (FY) 2024 CPDS and does not include a new start for the budget year. The additional funding requested in this CPDS reflects execution challenges experienced during early phases of construction, such as the termination and re-procurement of the site work subcontractor and the discovery of a design error in the High Explosive Laboratory blast walls. Based on a comprehensive estimate-at-completion (CEAC) that was submitted in March 2023, the HESE project will exceed both the approved CD-2/3 TPC and CD-4 date. An Over-Target-Baseline/Schedule (OTB/S) was implemented in July 2023 with a TPC of $295,000,000 and CD-4 date of second quarter FY 2028. The implementation of this OTB/S has informed this budget request, but the Department has not yet completed its formal review of the estimate. A baseline change proposal, informed by the required Independent Cost Estimate and External Independent Review, will be implemented in 3rd Quarter FY 2024 to reflect the new performance baseline.

A Federal Project Director is currently assigned to this project.

Critical Milestone History

Fiscal Quarter or Date

Fiscal Year[a]	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2015	11/22/2011	N/A	4Q FY 2014	4Q FY 2015	3Q FY 2016	4Q FY 2016	3Q FY 2020	3Q FY 2020
FY 2016	11/22/2011	1/9/2015	1/09/2015	1Q FY 2018	4Q FY 2017	1Q FY 2018	3Q FY 2023	4Q FY 2023
FY 2020	11/22/2011	1/9/2015	1/09/2015	3Q FY 2020	2Q FY 2020	3Q FY 2020	3Q FY 2025	4Q FY 2025
FY 2021	11/22/2011	1/9/2015	1/09/2015	4Q FY 2020	3Q FY 2020	4Q FY 2020	3Q FY 2025	4Q FY 2025
FY 2023	11/22/2011	1/9/2015	1/09/2015	4/13/2022	8/17/2020	4/13/2022	N/A	1Q FY 2028
FY 2024	11/22/2011	1/9/2015	1/09/2015	4/13/2022	8/17/2020	4/13/2022	N/A	1Q FY 2028
FY 2025	11/22/2011	1/9/2015	1/09/2015	4/13/2022	8/17/2020[b]	4/13/2022	N/A	2Q FY 2028[c]

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range
Conceptual Design Complete – Actual date the conceptual design was completed

[a] Funding requests were not submitted in fiscal years 2017, 2018, 2019, and 2022.
[b] The final design was completed on 7/27/2018, but this represents the completion of design revalidation.
[c] This date was informed by a completed comprehensive estimate at completion, but NNSA has not yet completed its formal review.

CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
Final Design Complete – Estimated/Actual date the project design will be/was complete(d)
CD-3 – Approve Start of Construction
D&D Complete – Completion of D&D work
CD-4 – Approve Start of Operations or Project Closeout

Fiscal Year	Performance Baseline Validation	CD-3A
FY 2023	4/12/2022	10/30/2020
FY 2024	4/12/2022	10/30/2020

CD-3A – Approve Site Preparation and Long-Lead Procurement

Project Cost History

($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2015	11,800	60,500	72,300	6,100	18,600	24,700	97,000
FY 2016	14,249	83,051	97,300	21,055	36,124	57,179	154,479
FY 2020	15,372	119,900	135,272	12,025	48,200	60,225	195,497
FY 2021	15,372	119,900	135,272	12,025	48,200	60,225	195,497
FY 2023	18,497	195,131	213,628	14,372	N/A	14,372	228,000
FY 2024	18,497	238,131	256,628	12,585	N/A	12,585	269,213[a]
FY 2025	18,871	258,584	277,455	14,593	N/A	17,465	295,000[b]

2. Project Scope and Justification

Scope[c]
The project will build three structures totaling 68,500 square feet with associated weather-proofed ramps totaling 4,000 square feet. These structures will replace the aging facilities in Zone 11 with new facilities that meet current codes and standards and better support program requirements:

- HE Laboratory: Equipment and facility will be designed to sustain an HE loading of 12 lb (±15%) HE equivalent. (28,000 square feet)
- HE Staging: Equipment and facility will be designed to sustain 50 lb (±15%) HE equivalent for temporary storage. (500 square feet)
- Technology Development and Deployment Laboratory: Provide necessary laboratory space for approximately 73 personnel to support the weapons complex mission. (40,000 square feet)

The CD-3A site preparation and long lead procurement scope included security fencing and utility relocations, and long lead procurement of blast chambers.

[a] This TPC was informed by an ongoing comprehensive estimate at completion, but it has not been formally reviewed by NNSA.
[b] This TPC was informed by a completed comprehensive estimate at completion, but it has not been formally reviewed by NNSA.
[c] All square foot values have been rounded to the nearest 500 SF.

Justification

Currently HE S&E personnel, as well as laboratory operations, are in 15 separate facilities which are, on average, more than 60 years old. The existing facilities are not constructed for today's operations or HE limits, and their distribution across Zone 11 does not provide for efficient work processes. The distance between facilities increases travel time for personnel and materials back and forth, which adds additional cost to operations. In addition, safety, security, and environmental issues associated with these aging facilities are mounting, as are the costs of addressing them.

Current HE capacity limits that prohibit quantities greater than a small amount create inefficient operations in several of the laboratories. HE limits mandate additional moves of HE to various facilities as well as to maintain safe separation limits. The HE capacity limitations are primarily due to the original design and structure of the old facilities. The numerous HE handling activities required to load, unload and move the HE increase potential safety hazards.

This project provides the following additional benefits in support of HE Manufacturing:

- Computational and experimental capability
- Capability to develop diagnostic tools for the evaluation, manufacturing support, surveillance, and testing of materials
- Capability to conduct technology development in modern facilities (most existing facilities that provide these capabilities are over 60 years old)
- Separate classified and non-classified spaces, increasing efficiency and lowering Information Security risk

The project is being conducted in accordance with the project management requirements in DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*. Funds appropriated under this data sheet may be used to provide independent assessments for planning and execution of this project, and contracted support services to the federal project team for oversight and support.

Key Performance Parameters (KPPs)

The Threshold KPPs, represent the minimum acceptable performance that the project must achieve. Achievement of the Threshold KPPs will be a prerequisite for approval of CD-4, Project Completion.

Performance Measure[a]
HE Laboratory: HE Operational Limit of 12 pounds
HE Staging: HE Operational Limit of 50 pounds
Technology Development and Deployment Laboratory: Accommodate approximately 73 personnel in the laboratory space; minimum number of 64, but no more than 85

[a] There are no objective KPPs for the HESE project.

3. Project Cost and Schedule

Financial Schedule

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2015	11,800	11,760	61
FY 2016	0	-11	1,515
FY 2017	-28 [a]	0	5,106
FY 2018	500 [b]	519	4,041
FY 2019	0	-1,084 [c]	-7 [d]
FY 2020	3,100	4,188	4,282
FY 2021	3,499	3,499	1,585
FY 2022	0	0	1,914
FY 2023	0	0	374
Total Design	**18,871**	**18,871**	**18,871**
Construction			
FY 2020	76,900	76,900	0
FY 2021	39,501	39,501	10,200
FY 2022	0	0	20,431
FY 2023	20,000	20,000	64,788
FY 2024	101,356	101,356	95,000
FY 2025	15,000	15,000	50,000
FY 2026	5,907	5,907	18,245
Total Construction	**258,664**	**258,664**	**258,664**
TEC			
FY 2015	11,800	11,760	61
FY 2016	0	-11	1,515
FY 2017	-28	0	5,106
FY 2018	500	519	4,041
FY 2019	0	-1,084	-7
FY 2020	80,000	81,088	4,282
FY 2021	43,000	43,000	11,785
FY 2022	0	0	22,345
FY 2023	20,000	20,000	65,162
FY 2024[e]	101,356	101,356	95,000
FY 2025	15,000	15,000	50,000
FY 2026	5,907	5,907	18,245
Total TEC	**277,535**	**277,535**	**277,535**

[a] Reflects recission of $28,013 in FY 2017.
[b] Reflects an internal reprogramming from 12-D-301, Transuranic Waste Facilities, LANL project to this project for continued design activities conducted by the U.S. Army Corps of Engineers.
[c] Reflects result of de-obligations that occurred during FY 2019 on AY 2015 funding.
[d] Reflects a credit that occurred during FY 2019 execution.

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2013	1,790	1,790	200
FY 2014	750	750	1,200
FY 2015	100	100	400
FY 2016	100	100	0
FY 2017	0	0	0
FY 2018	0	0	0
FY 2019	0	0	0
FY 2020	130	130	0
FY 2021	3,750	3,750	0
FY 2022	0	0	0
FY 2023	0	0	0
FY 2024	0	0	1,993
FY 2025	4,000	4,000	1,933
FY 2026	6,845	6,845	8,093
FY 2027	0	0	3,646
Total, OPC	**17,465**	**17,465**	**17,465**
Total Project Costs (TPC)			
FY 2013	1,790	1,790	200
FY 2014	750	750	1,200
FY 2015	11,900	11,860	461
FY 2016	100	89	1,515
FY 2017	-28	0	5,106
FY 2018	500	519	4,041
FY 2019	0	-1,084	-7
FY 2020	80,130	81,218	4,282
FY 2021	46,750	46,750	11,785
FY 2022	0	0	22,345
FY 2023	20,000	20,000	65,162
FY 2024	101,356	101,356	96,993
FY 2025	19,000	19,000	51,933
FY 2026	12,752	12,752	26,338
FY 2027	0	0	3,646
Total TPC	**295,000**	**295,000**	**295,000**

[a] FY 2024 Budget Authority assumptions are based on the FY 2024 President's Budget Request.

4. Details of Project Cost Estimate

($K)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	18,371	17,997	17,847
Federal Support	500	500	500
Contingency	0	0	150
Total Design	**18,871**	**18,497**	**18,497**
Construction			
Site Work	24,645	25,500	14,541
Equipment	6,025	6,500	4,450
Construction	192,215	160,331	147,930
Federal Support	10,000	6,000	3,410
Contingency	25,779	39,800	24,800
Total Construction	**258,664**	**238,131**	**195,131**
Total Estimated Cost (TEC)	**277,535**	**256,628**	**213,628**
Contingency, TEC	*25,779*	*39,800*	*24,950*
Other Project Costs (OPC)			
OPC except D&D			
Analysis of Alternatives	200	200	200
Conceptual Design	1,600	1,600	1,600
Startup (Transition to Operations)	9,769	7,750	9,482
Equipment and Moves	2,000	1,390	1,590
Federal Support	1,500	1,000	0
Contingency	2,396	645	1,500
Total, OPC except D&D	17,465	12,585	14,372
Total, OPC D&D	0	0	0
Total OPC	**17,465**	**12,585**	**14,372**
Contingency, OPC	*2,396*	*645*	*1,500*
Total Project Cost	**295,000**	**269,213**	**228,000**
Total Contingency (TEC+OPC)	***28,175***	***40,445***	***26,450***

5. Schedule of Appropriations Requests

($K)

Request Year	Type	Prior Years	FY2023	FY 2024	FY 2025	FY 2026	Total
FY 2015	TEC	72,300	0	0	0	0	72,300
	OPC	24,700	0	0	0	0	24,700
	TPC	97,000	0	0	0	0	97,000
FY 2016	TEC	96,456	0	0	0	0	96,456
	OPC	36,945	0	20,234	0	0	57,179
	TPC	133,401	0	20,234	0	0	153,635
FY 2020	TEC	135,272	0	0	0	0	135,272
	OPC	10,370	19,655	30,200	0	0	60,225
	TPC	145,642	19,655	30,200	0	0	195,497
FY 2021	TEC	135,272	0	0	0	0	135,272
	OPC	9,620	20,405	30,200	0	0	60,225
	TPC	144,892	20,405	30,200	0	0	195,497
FY 2023	TEC	135,272	20,000	58,356	0	0	213,628
	OPC	6,620	0	5,787	1,965	0	14,372
	TPC	141,892	20,000	64,143	1,965	0	228,000
FY 2024	TEC	135,272	20,000	101,356	0	0	256,628
	OPC	6,620	0	4,000	1,965	0	12,585
	TPC	141,892	20,000	105,356	1,965	0	269,213
FY 2025	TEC	135,272	20,000	101,356	15,000	5,907	277,535
	OPC	6,620	0	0	4,000	6,845	17,465
	TPC	141,892	20,000	101,356	19,000	12,752	295,000

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	2Q FY 2028
Expected Useful Life (number of years)	50
Expected Future Start of D&D of this capital asset (fiscal quarter)	2Q FY 2078

Related Funding Requirements
(Budget Authority in Millions of Dollars)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations and Maintenance	15.14	15.14	757	757

7. D&D Information

The disposition of the existing facilities has been captured in NNSA's infrastructure planning system and will be funded outside of the line-item once HESE is operational.

	Square Feet
New area being constructed by this project at Pantex Plant	72,500
Area of D&D at the Pantex Plant	0[a]
Area at the Pantex Plant to be transferred, sold, and/or D&D outside the project including area previously "banked"	72,500
Area of D&D in this project at other sites	0
Area at other sites to be transferred, sold, and/or D&D outside the project including area previously "banked"	0
Total area eliminated	72,500[a]

Pantex Plant Zone 11, Bldgs 11-2, 11-5, 11-14, 11-16, 11-17, 11-17A, 11-18, 11-19, 11-22, 11-27, 11-28, 11-38, 11-45, 11-47, 11-R-4, 11-R-7, 11-R-8, 11-R-10, 11-R-11, 11-R-13, 11-R-13A, and 11-R-23.

8. Acquisition Approach

The design and the construction were acquired through firm-fixed price subcontracts under the existing M&O cost plus incentive fee contract.

[a] Changed from the FY 2021 CPDS that indicated 82,766 SF because the D&D has been removed from the project.

18-D-690, Lithium Processing Facility
Y-12 National Security Complex, Oak Ridge, Tennessee
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary: The FY 2025 Request for the Lithium Processing Facility (LPF) is $260,000,000. The Chief Executive for Project Management approved the current Critical Decision (CD)-1 on December 31, 2019 with a high-end Total Project Cost (TPC) range of $1,645,000,000. The project current working estimate (CWE) based on previously planned scope is $2,355,490,000. However, given increases to the CWE above the high-end of the CD-1 range, NNSA is performing a project review to validate costs and identify opportunities for savings, including alternative acquisition strategies. The results of that project review may result in changes to outyear funding amounts, which are preliminary until DOE baselines the project in accordance with DOE Order 413.3B. A level III Federal Project Director has been assigned to the project.

This project is not a new start. Based on CD-1 approval, the Architect and Engineering (A/E) subcontract was awarded, and the preliminary design effort initiated in FY 2021. At the end of FY 2024, the design will be 100% complete.

FY 2025 funds will be used for Long-Lead Procurements and site preparation, Final Baselining, the Substation subproject, and Federal oversight.

Preliminary and final design, construction, and other project costs (OPC) will continue execution through line-item funding specifically appropriated for the project, as started in FY 2021. Prior to FY 2021, OPCs were funded from Capability Based Investments and Lithium Sustainment, except in FY 2018, when funding was appropriated under the project which funded conceptual design. The cost to complete the LPF Design is forecasted to be below the original $384,000,000 estimated at CD-1. The unused funding will be reallocated to the construction phase of the project.

Significant Changes:
The LPF project now encompasses two subprojects. The Main Processing Facility (MPF) subproject includes the original LPF scope and East End Substation (EES) subproject includes the new electrical substation requirement. The addition of the EES scope to the project is forecasted to be approved by the Project Management Executive (currently the Deputy Secretary) in third quarter FY 2024. Given ongoing project review and value engineering efforts, the incorporation of the EES scope, and funding requirements for higher-priority projects across the enterprise, changes to this project's funding profile may delay MPF CD-4 by two years. However, the project review will seek to restore the original schedule, where possible, as well as opportunities to deliver risk reduction to the overall lithium mission earlier than planned.

During the LPF design phase, Y-12 reviewed projected electrical load demands for LPF and future Y-12 National Security Complex operational growth. Based on these projections the existing Pine Ridge substation power output capacity will be insufficient for future requirements. Because insufficient electrical capacity will directly impact LPF's ability to prepare for and begin operations, NNSA determined that a substation requirement would be added to the LPF project in FY 2024. Planning for the substation subproject will continue through FY 2024 with the Tennessee Valley Authority (TVA), but critical long-lead and potentially site preparation requirements will be identified and procurements issued in FY 2024 to reduce schedule risk. The new substation is expected to be located in the east end of Y-12, adjacent to LPF Main Processing Facility, to optimize electrical power distribution at Y-12.

In 2023, after the 30% design milestone, an update to the 2019 project estimate was developed. The current estimate for the total project is $2,355,490,000. Increases to the cost estimate are primarily driven by current market conditions, addition of a substation subproject, increases to construction cost estimates for building footprint, point of service utilities, and building foundation, and growth in management reserve and contingency estimates. The project will be able to characterize any remaining impacts associated with current conditions following an updated estimate, expected Quarter 2 of FY 2025, when design is expected to be 100% complete. The design completion date may need to be revised should significant design change be required following the NNSA project review completion.

Critical Milestone History

Fiscal Quarter or Date[a]

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2019	06/10/2015	01/19/2018	2Q FY 2019	1Q FY 2021	2Q FY 2022	1Q FY 2021	N/A	2Q FY 2027
FY 2020	06/10/2015	02/28/2019	3Q FY 2019	2Q FY 2022	2Q FY 2022	2Q FY 2022	N/A	3Q FY 2027
FY 2021	06/10/2015	02/28/2019	12/31/2019	3Q FY 2024	3Q FY 2024	3Q FY 2024	N/A	4Q FY 2031
FY 2022	06/10/2015	02/28/2019	12/31/2019	1Q FY 2026[b]	2Q FY 2025[c]	1Q FY 2026	N/A	4Q FY 2031
FY 2023	06/10/2015	02/28/2019	12/31/2019	1Q FY 2026	2Q FY 2025	1Q FY 2026	N/A	4Q FY 2031
FY 2024	06/10/2015	02/28/2019	12/31/2019	1Q FY 2026	2Q FY 2025	1Q FY 2026	N/A	4Q FY 2031
FY 2025	06/10/2015	02/28/2019	12/31/2019	1Q FY 2026	2Q FY 2025	1Q FY 2026	N/A	4Q FY 2033

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range
Conceptual Design Complete – Actual date the conceptual design was completed (if applicable).
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
Final Design Complete – Estimated/Actual date the project design will be/was complete(d)
CD-3 – Approve Start of Construction
D&D Complete –Completion of D&D work
CD-4 – Approve Start of Operations or Project Complete

Fiscal Year	CD-3A
FY 2019	N/A
FY 2020	4Q FY 2021
FY 2021	4Q FY 2022
FY 2022	4Q FY 2023
FY 2023	4Q FY 2023
FY 2024	4Q FY 2023
FY 2025	08/24/2023

MPF CD-3A – Long-Lead Procurements and Site Preparation – CD-3A was approved on August 24, 2023, by the Project Management Executive at a cost of $300,000,000. Long-lead procurements consist of critical equipment such as lathes, mills, and presses. Site preparation work includes demolition of slabs and underground utilities; removal of unsuitable soils and backfill; and installation of site access controls, water drainage features, retention basins, and temporary facilities. The site preparation subcontract was awarded on August 30, 2023.

Fiscal Year	CD-3B
FY 2024	3Q FY 2024
FY 2025	3Q FY 2024

MPF CD-3B – Long-Lead Procurements – Long-lead procurements consist of critical equipment/material such as electrical transformers, specialized gloveboxes, critical equipment, and bulk construction material. By 3Q FY 2024, the CD-3B scope will be refined and a detailed estimate will be finalized. The current estimate range is $250,000,000 to $350,000,000.

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[a] Project schedules are estimates until the project baseline is approved at CD-2.
[b] CD-2 and CD-3 dates adjusted to include addition of schedule contingency previously omitted from CPDS.
[c] Final Design Completion date adjusted to include addition of schedule contingency previously omitted from CPDS.

Fiscal Year	Substation CD-3A
FY 2025	3Q FY 2024

Substation CD-3A – Long-Lead Procurements and Site Preparation – Long-lead procurements consist of critical electrical equipment such as electrical transformers and switchgear. Site preparation work, if authorized, includes demolition of slabs and underground utilities; removal of unsuitable soils and backfill; environmental remediation of Polycholrinated biphenyls (PCBs); The current estimate range is $20,000,000 to $60,000,000. A detailed estimate will be finalized prior to Substation CD-3A approval forecasted in 3Q FY 2024.

Project Cost History[a]

Table 3: Lithium Processing Facility (18-D-690), Project Total
(Dollars in Thousands)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2019	120,000	530,000	650,000	70,000	0	70,000	720,000
FY 2020	125,000	525,000	650,000	70,000	0	70,000	720,000
FY 2021	384,000	1,161,000	1,545,000	100,000	0	100,000	1,645,000
FY 2022	384,000	1,161,000	1,545,000	100,000	0	100,000	1,645,000
FY 2023	384,000	1,161,000	1,545,000	100,000	0	100,000	1,645,000
FY 2024	384,000	1,161,000	1,545,000	100,000	0	100,000	1,645,000
FY 2025	348,500	1,904,990	2,253,490	102,000	0	102,000	2,355,490

Table 3.1: Main Processing Facility (18-D-690-01, Subproject Subtotal
(Dollars in Thousands)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2019	120,000	530,000	650,000	70,000	0	70,000	720,000
FY 2020	125,000	525,000	650,000	70,000	0	70,000	720,000
FY 2021	384,000	1,161,000	1,545,000	100,000	0	100,000	1,645,000
FY 2022	384,000	1,161,000	1,545,000	100,000	0	100,000	1,645,000
FY 2023	384,000	1,161,000	1,545,000	100,000	0	100,000	1,645,000
FY 2024	384,000	1,161,000	1,545,000	100,000	0	100,000	1,645,000
FY 2025	348,500	1,771,990	2,120,490	100,000	0	100,000	2,220,490[b]

Table 3.2: East End Substation (18-D-690-02, Subproject Subtotal
(Dollars in Thousands)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2025	0[c]	133,000	133,000	2,000	0	2,000	135,000

[a] Project costs are estimates until the project baseline is approved at CD-2.
[b] As a result of the ongoing project review to validate costs and identify opportunities for savings, the TPC is likely to change.
[c] Substation subproject is a design/build type thus all the costs occur in construction.

2. Project Scope and Justification

Scope

The LPF project will design and construct a new facility, located at the former Biology complex site on Y-12, to relocate lithium operations and processes currently in Y-12's Building 9204-2 into a safe, reliable, modern building and to increase processing capacity to meet future needs. The Main Process Facility (subproject 18-D-690-01) will be approximately 236,000 square feet in size. It will be designed with space for lithium processing equipment, shipping and receiving, in-process storage, and technical and administrative support. The LPF project received CD-3A approval for the long-lead procurement and site preparation scope in FY 2023. Long-lead procurements include critical equipment such as lathes, mills, and presses. Site preparation work includes demolition of slabs and underground utilities; removal of unsuitable soils and backfill; and installation of site access controls, water drainage features, retention basins, and temporary facilities. To allow time for greater design maturity, a CD-3B long-lead procurement was added in FY 2024 for additional critical equipment/material such as electrical transformers, specialized gloveboxes, critical production equipment, and bulk construction material.

Due to insufficient Y-12 electrical capacity, the east end substation subproject (18-D-690-02) requirement was added to the project in FY 2024 with separate CD-3A long-lead and potentially site preparation procurements expected in FY 2024.

The project cost estimate and funding profile may be revised in future budget requests, prior to CD-2, to account for improved definition of the design, schedule, and/or risks. Funds appropriated under this data sheet may be used for contracted support services to the Federal Project Director and to conduct reviews of design and construction.

Justification

Lithium is an essential element in the canned subassemblies required for the refurbishment and modernization of the nuclear weapons stockpile. To support Defense Programs missions, Y-12 maintains capabilities and facilities to produce lithium components. In addition to supporting Defense Programs missions, lithium capabilities support international agreements, the NNSA Nuclear Smuggling Detection and Deterrence program, the Department of Homeland Security Countering Weapons of Mass Destruction Office, and the Department of Energy (DOE) Office of Science Isotope Program.

Lithium production work is currently performed in Building 9204-2, which was built in 1943 and is listed by Y-12 as the site's top infrastructure risk. The facility is oversized for today's mission, is costly to operate, does not meet modern safety or production standards, has been extended far past its designed operational life, and does not have additional capacity to meet future needs. Despite short-term investments to sustain capabilities, conditions in Building 9204-2 remain poor. As an example of impact and concern, the Senate Armed Service Committee in the National Defense Authorization Act of Fiscal Year 2015, acknowledged that: "Portions of the concrete ceiling above equipment that supplies components to the stockpile are spalling as the rebar inside the 60-plus-year-old concrete has corroded due to a desiccant used in the air handling system. Such working conditions are unacceptable if not dangerous." To ensure a sufficient supply of lithium material for future needs, reduce annual operating costs, and increase efficiencies through safer and more modern, agile, and responsive processes, a new facility must be built. A project-specific Analysis of Alternatives (AoA) was completed in 2017, using life-cycle cost, capacity, complexity, schedule, safety, and impact on existing operations as key evaluation criteria. Off-site real estate surveys and facilities assessments were completed and no suitable facilities were identified. Therefore, the selected preferred alternative was to build a new facility. Cost growth between CD-0 and CD-1, primarily due to industrial/process space and office space allocation growth, prompted DOE Cost Estimating and Program Evaluation (CEPE) to reexamine the AoA. NNSA leadership re-affirmed the selection of building a new facility following the reexamination process.

The project is being conducted in accordance with the project management requirements in DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*. The CD-1 approval process included a project risk assessment. Risk management assessments and updates continue as part of the project management. Earned value information for the LPF design effort will be reported in the Project Assessment and Reporting System (PARS), consistent with DOE O 413.3B. Funding appropriated for the LPF project will also be used for contracted support services to the Federal Project Director and to conduct reviews of design and construction of the LPF.

Preliminary Key Performance Parameters (KPPs)

The project's performance measure includes threshold and objective KPPs. The threshold KPPs represent the minimum acceptable performance that the project must achieve. These thresholds are presented with increased detail in the classified Project Requirements Document (PRD). Achievement of the threshold KPPs will be a prerequisite for approval of CD-4, Project Completion. The objective KPPs, also detailed in the PRD, represent the desired project performance.

Performance Measure[a]	Threshold	Objective
Demonstrate capacity to process and produce sufficient lithium material and manufacture sufficient lithium components to meet projected weapons program demands	Threshold Performance Parameters are identified in the Classified Project Requirements Document	Objective Performance Parameters are identified in the Classified Project Requirements Document

[a] Key Performance Parameters will be approved upon approval of the project baseline.

3. Financial Schedule

LPF funding is appropriated for the total project 18-D-690. Allotment to the subprojects is shown in the below tables. While the tables reflect all funding for the substation subproject in FY 2025, some funding for long lead purchases and possibly site preparation may be required in FY 2024. Updates will be made in future construction data sheets to reflect actual project execution.

Table 5: Lithium Processing Facility (18-D-690), Project Total, Financial Schedule
(Dollars in Thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2019	19,000	19,000	6,570
FY 2020	32,000	19,000	7,736
FY 2021	99,405	99,405	29,233
FY 2022	164,902	164,902	60,503
FY 2023	33,193	46,193	98,224
FY 2024	0	0	95,127
FY 2025	0	0	51,107
Total Design	**348,500**	**348,500**	**348,500**
Construction			
FY 2022	0	0	0
FY 2023	176,893	170,000	0
FY 2024	200,770	200,570	63,000
FY 2025	242,000	244,000	182,000
FY 2026	169,009	165,000	292,000
FY 2027	171,000	170,000	311,000
FY 2028	193,424	190,000	283,000
FY 2029	266,000	274,000	252,000
FY 2030	441,404	400,000	250,000
FY 2031	15,000	61,930	226,000
FY 2032	29,490	29,490	16,500
FY 2033	0	0	29,490
Total Construction	**1,904,990**	**1,904,990**	**1,904,990**
TEC			
FY 2019	19,000	19,000	6,570
FY 2020	32,000	19,000	7,736
FY 2021	99,405	99,405	29,233
FY 2022	164,902	164,902	60,503
FY 2023	210,086	216,193	98,224
FY 2024	200,770	200,570	158,127
FY 2025	242,000	244,000	233,107
FY 2026	169,009	165,000	292,000
FY 2027	171,000	170,000	311,000
FY 2028	193,424	190,000	283,000
FY 2029	266,000	274,000	252,000
FY 2030	441,404	400,000	250,000
FY 2031	15,000	61,930	226,000
FY 2032	29,490	29,490	16,500
FY 2033	0	0	29,490
Total TEC	**2,253,490**	**2,253,490**	**2,253,490**

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2015	497	497	88
FY 2016	247	247	637
FY 2017	4,680	4,680	572
FY 2018	5,000	3,661	4,527
FY 2019	0	0	3,261
FY 2020	1,000	1,000	0
FY 2021	10,000	10,000	979
FY 2022	3,000	3,000	6,971
FY 2023	3,000	3,000	13,223
FY 2024	10,000	11,339	9,000
FY 2025	18,000	18,000	9,000
FY 2026	20,000	20,000	9,000
FY 2027	22,000	22,000	9,000
FY 2028	4,576	4,576	8,000
FY 2029	0	0	10,000
FY 2030	0	0	6,000
FY 2031	0	0	5,000
FY 2032	0	0	4,612
FY 2033	0	0	2,130
Total, OPC	**102,000**	**102,000**	**102,000**
Total Project Costs (TPC)			
FY 2015	497	497	88
FY 2016	247	247	637
FY 2017	4,680	4,680	572
FY 2018	5,000	3,661	4,527
FY 2019	19,000	19,000	9,831
FY 2020	33,000	20,000	7,736
FY 2021	109,405	109,405	30,212
FY 2022	167,902	167,902	67,474
FY 2023	213,086[a]	219,193	111,447
FY 2024[b]	210,770	211,909	167,127
FY 2025	260,000	262,000	242,107
FY 2026	189,009	185,000	301,000
FY 2027	193,000	192,000	320,000
FY 2028	198,000	194,576	291,000
FY 2029	266,000	274,000	262,000
FY 2030	441,404	400,000	256,000
FY 2031	15,000	61,930	231,000
FY 2032	29,490	29,490	21,112
FY 2033	0	0	31,620
Total TPC	**2,355,490**	**2,355,490**	**2,355,490**

[a] FY 2023 Enacted amount was $216,886M but less $3.8M for the use of prior year balances.
[b] FY 2024 Budget Authority assumptions are based on the FY 2024 President's Budget Request.

Table 5.1: Main Processing Facility (18-D-690-01), Subproject Subtotal, Financial Schedule
(Dollars in Thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2019	19,000	19,000	6,570
FY 2020	32,000	19,000	7,736
FY 2021	99,405	99,405	29,233
FY 2022	164,902	164,902	60,503
FY 2023	33,193	46,193	98,224
FY 2024	0	0	95,127
FY 2025	0	0	51,107
Total Design	**348,500**	**348,500**	**348,500**
Construction			
FY 2022	0	0	0
FY 2023	176,893	170,000	0
FY 2024	172,770[a]	172,570	50,000
FY 2025	137,000	139,000	155,000
FY 2026	169,009	165,000	250,000
FY 2027	171,000	170,000	270,000
FY 2028	193,424	190,000	275,000
FY 2029	266,000	274,000	250,000
FY 2030	441,404	400,000	250,000
FY 2031	15,000	61,930	226,000
FY 2032	29,490	29,490	16,500
FY 2033	0	0	29,490
Total Construction	**1,771,990**	**1,771,990**	**1,771,990**
TEC			
FY 2019	19,000	19,000	6,570
FY 2020	32,000	19,000	7,736
FY 2021	99,405	99,405	29,233
FY 2022	164,902	164,902	60,503
FY 2023	210,086	216,193	98,224
FY 2024	172,770	172,570	145,127
FY 2025	137,000	139,000	206,107
FY 2026	169,009	165,000	250,000
FY 2027	171,000	170,000	270,000
FY 2028	193,424	190,000	275,000
FY 2029	266,000	274,000	250,000
FY 2030	441,404	400,000	250,000
FY 2031	15,000	61,930	226,000
FY 2032	29,490	29,490	16,500
FY 2033	0	0	29,490
Total TEC	**2,120,490**	**2,120,490**	**2,120,490**

[a] FY 2024 budget request for construction of $195.770M is less $28.0M to support EES Long-lead procurements, pending subproject approval.

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2015[a]	497	497	88
FY 2016	247	247	637
FY 2017	4,680	4,680	572
FY 2018	5,000	3,661	4,527
FY 2019	0	0	3,261
FY 2020	1,000	1,000	0
FY 2021	10,000	10,000	979
FY 2022	3,000	3,000	6,971
FY 2023	3,000	3,000	13,223
FY 2024	10,000	11,339	9,000
FY 2025	16,000	16,000	9,000
FY 2026	20,000	20,000	9,000
FY 2027	22,000	22,000	9,000
FY 2028	4,576	4,576	8,000
FY 2029	0	0	8,000
FY 2030	0	0	6,000
FY 2031	0	0	5,000
FY 2032	0	0	4,612
FY 2033	0	0	2,130
Total, OPC	**100,000**	**100,000**	**100,000**
Total Project Costs (TPC)			
FY 2015	497	497	88
FY 2016	247	247	637
FY 2017	4,680	4,680	572
FY 2018	5,000	3,661	4,527
FY 2019	19,000	19,000	9,831
FY 2020	33,000	20,000	7,736
FY 2021	109,405	109,405	30,212
FY 2022	167,902	167,902	67,474
FY 2023	213,086[a]	219,193	111,447
FY 2024	210,770	183,909	154,127
FY 2025	125,000	155,000	215,107
FY 2026	189,009	185,000	259,000
FY 2027	193,000	192,000	279,000
FY 2028	198,000	194,576	283,000
FY 2029	266,000	274,000	258,000
FY 2030	441,404	400,000	256,000
FY 2031	15,000	61,930	231,000
FY 2032	29,490	29,490	21,112
FY 2033	0	0	31,620
Total TPC	**2,220,490**	**2,220,490**	**2,220,490**

[a] FY 2023 Enacted amount was $216.886M but less $3.8M for the use of prior year balances.

Table 5.2: East End Substation (18-D-690-02), Subproject Subtotal, Financial Schedule[a]
(Dollars in Thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2024	0	0	0
Total Design	**0**	**0**	**0**
Construction			
FY 2024	28,000	28,000	13,000
FY 2025	105,000	105,000	27,000
FY 2026	0	0	42,000
FY 2027	0	0	41,000
FY 2028	0	0	8,000
FY 2029	0	0	2,000
Total Construction	**133,000**	**133,000**	**133,000**
TEC			
FY 2024	28,000	28,000	13,000
FY 2025	105,000	105,000	27,000
FY 2026	0	0	42,000
FY 2027	0	0	41,000
FY 2028	0	0	8,000
FY 2029	0	0	2,000
Total TEC	**133,000**	**133,000**	**133,000**
Other Project Costs (OPC)			
FY 2025	2,000	2,000	0
FY 2026	0	0	0
FY 2027	0	0	0
FY 2028	0	0	0
FY 2029	0	0	2,000
Total, OPC	**2,000**	**2,000**	**2,000**
Total Project Costs (TPC)			
FY 2024	28,000	28,000	13,000
FY 2025	107,000	107,000	27,000
FY 2026	0	0	42,000
FY 2027	0	0	41,000
FY 2028	0	0	8,000
FY 2029	0	0	4,000
Total TPC	**135,000**	**135,000**	**135,000**

[a] Substation subproject is a design-build type thus all cost occurs in construction. Estimated values are currently based on preliminary planning estimates.

4. Details of Project Cost Estimate

Table 6: Lithium Processing Facility (18-D-690), Project Total, Cost Estimate
(Dollars in Thousands)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline[a]
Total Estimated Cost (TEC)			
Design			
Design	295,600	306,000	TBD
Federal Design Support	10,500	18,000	TBD
Contingency	42,400	60,000	TBD
Total Design	**348,500**	**384,000**	**TBD**
Construction			
Site Work	69,000	25,045	TBD
Equipment	456,000	417,939	TBD
Construction	805,880	434,018	TBD
Federal Design Support	37,500	28,000	TBD
Project Management	96,000	66,628	TBD
Contingency	440,610	189,370	TBD
Total Construction	**1,904,990**	**1,161,000**	**TBD**
Total Estimated Cost (TEC)	**2,253,490**	**1,545,000**	**TBD**
Contingency, TEC	*483,010*	*249,370*	*TBD*
Other Project Costs (OPC)			
OPC except D&D			
R&D	23,389	23,389	TBD
Conceptual Planning	7,085	7,085	TBD
Conceptual Design	4,218	4,218	TBD
Other OPC Costs (Startup, ES&H, etc.)	49,698	47,698	TBD
Contingency	17,610	17,610	TBD
Total OPC	**102,000**	**100,000**	**TBD**
Contingency, OPC	*17,610*	*17,610*	*TBD*
Total Project Cost	**2,355,490**	**1,645,000**	**TBD**
Total Contingency (TEC+OPC)	***500,620***	***266,980***	***TBD***

[a] Project is Pre-CD-2, therefore no baseline has been set and the Original Validated Baseline value is not applicable.

Table 6.1: Main Processing Facility (18-D-690-01), Subproject Subtotal, Cost Estimate
(Dollars in Thousands)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline[a]
Total Estimated Cost (TEC)			
Design			
Design	295,600	306,000	TBD
Federal Design Support	10,500	18,000	TBD
Contingency	42,400	60,000	TBD
Total Design	**348,500**	**384,000**	**TBD**
Construction			
Site Work	59,000	25,045	TBD
Equipment	418,000	417,939	TBD
Construction	753,880	434,018	TBD
Federal Design Support	35,500	28,000	TBD
Project Management	86,000	66,628	TBD
Contingency	419,610	189,370	TBD
Total Construction	**1,771,990**	**1,161,000**	**TBD**
Total Estimated Cost (TEC)	**2,120,490**	**1,545,000**	**TBD**
Contingency, TEC	*462,010*	*249,370*	*TBD*
Other Project Costs (OPC)			
OPC except D&D			
R&D	23,389	23,389	TBD
Conceptual Planning	7,085	7,085	TBD
Conceptual Design	4,218	4,218	TBD
Other OPC Costs (Startup, ES&H, etc.)	47,698	47,698	TBD
Contingency	17,610	17,610	TBD
Total OPC	**100,000**	**100,000**	**TBD**
Contingency, OPC	*17,610*	*17,610*	*TBD*
Total Project Cost	**2,220,490**	**1,645,000**	**TBD**
Total Contingency (TEC+OPC)	***479,620***	***266,980***	***TBD***

[a] Project is Pre-CD-2, therefore no baseline has been set and the Original Validated Baseline value is not applicable.

Table 6.2: East End Substation (18-D-690-02), Subproject Subtotal, Cost Estimate
(Dollars in Thousands)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline[a]
Total Estimated Cost (TEC)			
Design			
Design	0	0	TBD
Federal Design Support	0	0	TBD
Contingency	0	0	TBD
Total Design	**0**	**0**	**TBD**
Construction			
Site Work	10,000	0	TBD
Equipment	38,000	0	TBD
Construction	52,000	0	TBD
Federal Design Support	2,000	0	TBD
Project Management	10,000	0	TBD
Contingency	21,000	0	TBD
Total Construction	**133,000**	**0**	**TBD**
Total Estimated Cost (TEC)	**133,000**	**0**	**TBD**
Contingency, TEC	*21,000*	*0*	*TBD*
Other Project Costs (OPC)			
OPC except D&D			
R&D	0	0	TBD
Conceptual Planning	0	0	TBD
Conceptual Design	0	0	TBD
Other OPC Costs (Startup, ES&H, etc.)	2,000	0	TBD
Contingency	0	0	TBD
Total OPC	**2,000**	**0**	**TBD**
Contingency, OPC	*0*	*0*	*TBD*
Total Project Cost	**135,000**	**0**	**TBD**
Total Contingency (TEC+OPC)	***21,000***	***0***	***TBD***

[a] Project is Pre-CD-2, therefore no baseline has been set and the Original Validated Baseline value is not applicable.

5. Schedule of Appropriations Requests

(Dollars in Thousands)

Request Year	Type	Prior Years	FY2023	FY 2024	FY 2025	FY2026	FY2027	FY2028	FY2029	Out Years	Total
FY 2019	TEC	203,100	201,600	200,000	45,300	0	0	0	0	0	650,000
	OPC	13,369	1,000	11,936	13,663	17,032	13,000	0	0	0	70,000
	TPC	216,469	202,600	211,936	58,963	17,032	13,000	0	0	0	720,000
FY 2020	TEC	208,100	191,600	217,728	32,572	0	0	0	0	0	650,000
	OPC	12,074	1,000	12,236	16,563	18,132	9,995	0	0	0	70,000
	TPC	220,174	192,600	229,964	49,135	18,132	9,995	0	0	0	720,000
FY 2021	TEC	369,307	223,012	250,770	245,312	251,000	147,000	0	0	58,599	1,545,000
	OPC	24,424	3,000	10,000	16,000	20,000	22,000	0	0	4,576	100,000
	TPC	393,731	226,012	260,770	261,312	271,000	169,000	0	0	63,175	1,645,000
FY 2022	TEC	315,307	TBD	TBD	TBD	TBD	TBD	TBD	TBD	1,229,693	1,545,000
	OPC	24,424	TBD	TBD	TBD	TBD	TBD	TBD	TBD	75,576	100,000
	TPC	339,731	TBD	TBD	TBD	TBD	TBD	TBD	TBD	1,305,269	1,645,000
FY 2023	TEC	315,307	213,886	250,770	264,000	270,000	228,000	0	0	3,037	1,545,000
	OPC	24,424	3,000	10,000	16,000	20,000	22,000	0	0	4,576	100,000
	TPC	339,731	216,886	260,770	280,000	290,000	250,000	0	0	7,613	1,645,000
FY 2024	TEC	315,307	213,886	200,770	264,000	270,000	263,000	18,037	0	0	1,545,000
	OPC	24,424	3,000	10,000	16,000	20,000	22,000	4,576	0	0	100,000
	TPC	339,731	216,886	210,770	280,000	290,000	285,000	22,613	0	0	1,645,000
FY 2025	TEC	315,307	210,086	200,770	244,000	169,009	171,000	193,424	266,000	485,894	2,255,490
	OPC	24,424	3,000	10,000	16,000	20,000	22,000	4,576	0	0	100,000
	TPC	339,731	213,086[a]	210,770	260,000	189,009	193,000	198,000	266,000	485,894	2,355,490

[a] FY 2023 Enacted amount was $216,886M but less $3.8M for the use of prior year balances.

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy	4Q FY 2033
Expected Useful Life	50 years
Expected Future Start of D&D of this capital asset	4Q FY 2083

Related Funding requirements

(Budget Authority in Millions of Dollars)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations and Maintenance	33	33[a]	1,669	1,669

7. D&D Information

The location for the new LPF is the former Biology Complex site at Y-12. D&D of the existing facilities is being funded and managed by DOE's Office of Environmental Management through its Y-12 Excess Facilities D&D program. Building 9204-2 houses operations in addition to lithium production. Once all capabilities have been moved out of Building 9204-2, final D&D of existing facilities will be the responsibility of the DOE Office of Environmental Management.

8. Acquisition Approach

NNSA has contracted with the M&O to award multiple subcontracts of various types. Primary design effort, through the end of the project, will be accomplished via a cost-plus award fee subcontract to an Architect/Engineering firm. Various firm fixed price subcontracts, with a firm fixed price option to fabricate, will be used for most of the specialized process equipment design and procurement except for the machining lathe/mill complex prototype, which will use a cost-plus incentive fee subcontract for design phase with an optional firm fixed price for fabrication. The project will utilize Construction Manager at Risk (CMAR) services. The first phase of the CMAR contract, which provides constructability reviews and cost saving design/construction recommendations, will be accomplished via a time and materials subcontract. The second phase will be an optional firm fixed price subcontract for the construction of the LPF Main Processing Facility. As allowed by Order 413.3B, the project scope includes an approved CD-3A for site preparation and long-lead procurements, and will seek a CD-3B approval for additional long lead procurements. The East End Substation acquisition approach will mirror the successful Pine Ridge Substation project at Y-12 and utilize the Tennessee Valley Authority (TVA), the local power utility authority.

[a] Operations and Maintenance cost is planned to be updated after baselining the cost estimate at CD-2.

Uranium Processing Facility (UPF), 06-D-141
Y-12 National Security Complex, Oak Ridge, Tennessee
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary:

The Fiscal Year (FY) 2025 Request for the Uranium Processing Facility (UPF) is $800,000,000. The most recent Critical Decision (CD)-2/3 was approved on March 21, 2018, by the Deputy Secretary of Energy, with a total project cost (TPC) of $6,500,000,000 and a Critical Decision (CD)-4 of December 31, 2025. A Level 4 Federal Project Director has been assigned to this project and has approved this Construction Project Data Sheet (CPDS).

An increase in the Total Project Cost (TPC) and change in CD-4 date for the Process Support Facilities (PSF) subproject was approved by the Deputy Administrator for Defense Programs (NA-10) in February 2023. The TPC was increased from $140,000,000 to $194,000,000, and the CD-4 date was extended from December 2025 to December 2026.

The project plans to allocate $175,000,000 in FY 2025 for the Salvage and Accountability Building (SAB) Subproject (06-D-141-09). The CD-2/3 for this subproject was approved on March 21, 2018, by the Deputy Secretary of Energy with a TPC of $1,180,000,000. The long lead equipment authorized as part of the Main Process Building (MPB) CD-3B for the SAB was included in the SAB TPC at CD-2/3.

The project plans to allocate $625,000,000 in FY 2025 for the MPB Subproject (06-D-141-04). The CD-2/3 was approved on March 21, 2018, by the Deputy Secretary of Energy with a TPC of $4,731,786,000. The CD-3A for Long Lead Procurement and Site Preparation was approved on March 30, 2016. The long lead equipment authorized as part of CD-3B for the MPB is included in the MPB TPC.

Significant Changes:
Construction associated with the UPF project is ongoing, and the project is performing startup and commissioning activities for completed scope as appropriate. Significant construction activities completed in FY 2023 include receipt and setting of all gloveboxes for the MPB; setting the Decontamination Line Glovebox and installing the Calcination Walk In Enclosure in the SAB; and turning over of 40 of 49 total systems (82%) from construction to startup in the PSF.

In March 2018, UPF achieved CD-2/3, *Approve Performance Baseline/Approve Start of Construction*, with a total project cost (TPC) of $6.5 billion and a completion date of 4th Quarter, FY 2025. Based on information under review by the Department, the UPF project will exceed both the CD-2/3 schedule and TPC. The FY 2025 FYNSP funds the project to a $9.34 billion TPC, which represented NNSA's best estimate at the time the 2025 FYNSP profile was developed. Following finalization of the FY 2025 FYNSP, construction costs have continued to increase, primarily due to schedule slippages in construction, system turnover, and testing as the project awaits additional FY 2024 funding to restore staffing lost in FY 2023. Duration extensions are caused by contractor performance and the contractor's failure to notify NNSA of cost overruns in a timely manner to inform the budget process. The Federal Project Director's current estimate for the project is a TPC of $10.0 to 10.5 billion, with CD-4 in FY 2032. These cost and schedule estimates are preliminary and may change when the External Independent Review (EIR) and Independent Cost Review (ICR) currently underway are finalized. After completion of the EIR and ICR, a baseline change request will be submitted to the Deputy Secretary for approval. DOE/NNSA will notify Congress of the revised baseline, once approved.

The UPF Project experienced cost impacts that were not identified quickly enough by NNSA or the contractor. The UPF project experienced direct cost impacts due to COVID, including reimbursement of the costs of paid leave associated with COVID-19 (including sick leave) for the contractor and eligible subcontractors, costs associated with health protocols, and additional medical support. Additionally, indirect costs associated with COVID such as workforce inefficiencies, periods of high absenteeism, and unpredictable material availability drove additional cost. In total, NNSA assesses COVID cost impacts represent 35-50 percent of the cost increase over the existing TPC baseline of $6.5B. Contractor performance and planning

accounts for 50-65% of the increase. Original estimates and planning assumptions on overall productivity, as well as the estimated time to complete system testing and turnover were underestimated. The contractor's inadequate intermediate and long-term planning resulted in multiple re-planning efforts, and the contractor failed to perform as planned on approved long-lead procurements intended to mitigate schedule risk associated with furnaces, gloveboxes, and equipment skids. Degraded project performance metrics and inadequate forecasting made the timely identification of cost overruns and schedule extensions more difficult, thereby delaying requests for additional funding.

FY 2025 and prior year funds will be used for ongoing construction, startup, and commissioning activities for the MPB, SAB, and PSF UPF subprojects. Subproject descriptions are included in Section 2.

As represented since the FY 2012 Request, design, construction, and Other Project Costs (OPC) will continue to be executed through the line-item funding. Since October 1, 2011, OPC work has been and will only be performed using funding specifically appropriated by Congress for the project.

Critical Milestone History

Table 1: Uranium Processing Facility Project (06-D-141) Critical Milestone History by Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2011	12/17/2004	N/A	7/25/2007	TBD	2Q FY 2014	TBD	TBD	TBD
FY 2012	12/17/2004	N/A	7/25/2007	4Q FY 2013	2Q FY 2014	4Q FY 2013	TBD	TBD
FY 2013	12/17/2004	N/A	7/25/2007	4Q FY 2013	2Q FY 2014	4Q FY 2013	N/A	TBD
FY 2014	12/17/2004	N/A	6/8/2012	3Q FY 2014	4QFY 2015	3Q FY 2015	N/A	TBD
FY 2015	12/17/2004	N/A	6/8/2012	TBD	TBD	TBD	N/A	TBD
FY 2016	12/17/2004	2/9/2006	6/8/2012	TBD	TBD	TBD	N/A	TBD
FY 2017	12/17/2004	6/24/2015	6/8/2012	4Q FY 2017	4Q FY 2017	4Q FY 2017	N/A	4Q FY 2025
FY 2018	12/17/2004	6/24/2015	6/8/2012	2Q FY 2018	4Q FY 2017	2Q FY 2018	N/A	4Q FY 2025
FY 2019	12/17/2004	6/24/2015	6/8/2012	2Q FY 2018	8/25/2017	2Q FY 2018	N/A	4Q FY 2025
FY 2020 PB	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	12/31/2025
FY 2021	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	12/31/2025
FY 2022	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	12/31/2025
FY 2023	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	12/31/2025
FY 2024	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	1Q-2Q FY 2029
FY 2025	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	3Q-4Q FY 2030[a]

Table 1.1: Site Readiness Subproject (06-D-141-01) Critical Milestone History by Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2014 PB	12/17/2004	N/A	6/8/2012	1/29/2013	1/29/2013	1/29/2013	N/A	2Q FY 2015
FY 2015	12/17/2004	N/A	6/8/2012	1/29/2013	1/29/2013	1/29/2013	N/A	2Q FY 2015
FY 2016	12/17/2004	2/9/2006	6/8/2012	1/29/2013	1/29/2013	1/29/2013	N/A	2Q FY 2015
FY 2017	12/17/2004	2/9/2006	6/8/2012	1/29/2013	1/29/2013	1/29/2013	N/A	2/27/2015

[a] The current federal assessment estimates are aligned with the FY 2025 FYNSP until the projected is re-baselined.

Table 1.2: Site Infrastructure and Services Subproject (06-D-141-05) Critical Milestone History by Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2015	12/17/2004	N/A	7/25/2007	4Q FY 2014	4Q FY 2013	4Q FY 2014	N/A	4Q FY 2016
FY 2016	12/17/2004	2/9/2006	6/8/2012	2Q FY 2015	3Q FY 2015	2Q FY 2015	N/A	4Q FY 2016
FY 2017 PB	12/17/2004	2/9/2006	6/8/2012	3/12/2015	3/12/2015	3/12/2015	N/A	4/28/2018
FY 2018	12/17/2004	2/9/2006	6/8/2012	3/12/2015	3/12/2015	3/12/2015	N/A	4/28/2018
FY 2019	12/17/2004	2/9/2006	6/8/2012	3/12/2015	3/12/2015	3/12/2015	N/A	4/28/2018
FY 2020	12/17/2004	2/9/2006	6/8/2012	3/12/2015	3/12/2015	3/12/2015	N/A	2/28/2018

Table 1.3: Substation Subproject (06-D-141-07) Critical Milestone History by Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2017	12/17/2004	6/24/2015	6/8/2012	4Q FY 2016	4Q FY 2016	4Q FY 2016	N/A	1Q FY 2019
FY 2018 PB	12/17/2004	6/24/2015	6/8/2012	9/14/2016	9/30/2017	9/14/2016	N/A	6/30/2020
FY 2019	12/17/2004	6/24/2015	6/8/2012	9/14/2016	12/22/2017	9/14/2016	N/A	6/30/2020
FY 2020	12/17/2004	6/24/2015	6/8/2012	9/14/2016	12/22/2017	9/14/2016	N/A	6/30/2020
FY 2021	12/17/2004	6/24/2015	6/8/2012	9/14/2016	12/22/2017	9/14/2016	N/A	12/20/2019

Table 1.4: Mechanical Electrical Building Subproject (06-D-141-06) Critical Milestone History by Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2017	12/17/2004	6/24/2015	6/8/2012	2Q FY 2017	4Q FY 2017	2Q FY 2017	N/A	4Q FY 2021
FY 2018 PB	12/17/2004	6/24/2015	6/8/2012	12/13/2016	4Q FY 2017	12/13/2016	N/A	1/31/2022
FY 2019	12/17/2004	6/24/2015	6/8/2012	12/13/2016	9/30/2017	12/13/2016	N/A	1/31/2022
FY 2020	12/17/2004	6/24/2015	6/8/2012	12/13/2016	9/30/2017	12/13/2016	N/A	1/31/2022
FY 2021	12/17/2004	6/24/2015	6/8/2012	12/13/2016	9/30/2017	12/13/2016	N/A	1/31/2022
FY 2022	12/17/2004	6/24/2015	6/8/2012	12/13/2016	9/30/2017	12/13/2016	N/A	1/31/2022
FY 2023	12/17/2004	6/24/2015	6/8/2012	12/13/2016	9/30/2017	12/13/2016	N/A	8/31/2022[a]
FY 2024	12/17/2004	6/24/2015	6/8/2012	12/13/2016	9/30/2017	12/13/2016	N/A	7/8/2022

[a] Reflects BCP approved in FY 2022 extending the CD-4 date.

Table 1.5: Process Support Facilities Subproject (06-D-141-08) Critical Milestone History by Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2017	12/17/2004	6/24/2015	6/8/2012	3Q FY 2017	3Q FY 2017	3Q FY 2017	N/A	4Q FY 2021
FY 2018	12/17/2004	6/24/2015	6/8/2012	2Q FY 2018	4Q FY 2017	2Q FY 2018	N/A	4Q FY 2025
FY 2019	12/17/2004	6/24/2015	6/8/2012	2Q FY 2018	9/30/2017	2Q FY 2018	N/A	4Q FY 2025
FY 2020 PB	12/17/2004	6/24/2015	6/8/2012	3/16/2018	9/30/2017	3/16/2018	N/A	12/31/2025
FY 2021	12/17/2004	6/24/2015	6/8/2012	3/16/2018	9/30/2017	3/16/2018	N/A	12/31/2025
FY 2022	12/17/2004	6/24/2015	6/8/2012	3/16/2018	9/30/2017	3/16/2018	N/A	12/31/2025
FY 2023	12/17/2004	6/24/2015	6/8/2012	3/16/2018[a]	9/30/2017	3/16/2018	N/A	12/31/2025
FY 2024	12/17/2004	6/24/2015	6/8/2012	3/16/2018	9/30/2017	3/16/2018	N/A	12/31/2026[b]
FY 2025	12/17/2004	6/24/2015	6/8/2012	3/16/2018	9/30/2017	3/16/2018	N/A	1Q FY 2027

Table 1.6: Salvage and Accountability Building Subproject (06-D-141-09) Critical Milestone History by Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2017	12/17/2004	6/24/2015	6/8/2012	4Q FY 2017	4Q FY 2017	4Q FY 2017	N/A	4Q FY 2025
FY 2018	12/17/2004	6/24/2015	6/8/2012	3/21/2018	4Q FY 2017	3/21/2018	N/A	4Q FY 2025
FY 2019	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	4Q FY 2025
FY 2020 PB	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	12/31/2025
FY 2021	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	12/31/2025
FY 2022	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	12/31/2025
FY 2023	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	12/31/2025
FY 2024	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	1Q-2Q FY 2029
FY 2025	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	3Q-4Q FY 2030[c]

[a] Corrects CD-2/3 approval date to 3/16/2018 from FY 2020 through FY 2022 dates, which were in error.

[b] Reflects BCP approved in FY 2023 extending the CD-4 date.

[c] The current federal assessment estimates aligned with the FY 2025 FYNSP until the project is re-baselined.

Table 1.7: Main Process Building Subproject (06-D-141-04) Critical Milestone History by Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2014	12/17/2004	N/A	6/8/2012	3Q FY 2014	4Q FY 2015	3Q FY 2015	N/A	TBD
FY 2015	12/17/2004	N/A	6/8/2012	TBD	TBD	TBD	N/A	TBD
FY 2016	12/17/2004	2/9/2006	6/8/2012	TBD	TBD	TBD	N/A	TBD
FY 2017	12/17/2004	6/24/2015	6/8/2012	4Q FY 2017	4Q FY 2017	4Q FY 2017	N/A	4Q FY 2025
FY 2018	12/17/2004	6/24/2015	6/8/2012	2Q FY 2018	4Q FY 2017	2Q FY 2018	N/A	4Q FY 2025
FY 2019	12/17/2004	6/24/2015	6/8/2012	2Q FY 2018	8/25/2017	2Q FY 2018	N/A	4Q FY 2025
FY 2020 PB	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	12/31/2025
FY 2021	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	12/31/2025
FY 2022	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	12/31/2025
FY 2023	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	12/31/2025
FY 2024	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	1Q-2Q FY 2029
FY 2025	12/17/2004	6/24/2015	6/8/2012	3/21/2018	8/25/2017	3/21/2018	N/A	3Q-4Q FY 2030[a]

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range
Conceptual Design Complete – Actual date the conceptual design was completed (if applicable)
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
Final Design Complete – Estimated/Actual date the project design will be/was complete (d)
CD-3 – Approve Start of Construction
D&D Complete – Completion of D&D work
CD-4 – Approve Start of Operations or Project Closeout

Table 2: Uranium Processing Facility Project (06-D-141) Baseline and Long Lead Approval by Fiscal Quarter or Date

Fiscal Year	UPF CD-2/3	MPB CD-3A	MPB CD-3B	MPB CD-3C	Substation CD-3A
FY 2017	N/A	2Q FY 2016	1Q F Y2017	1Q FY 2017	3Q FY 2016
FY 2018	3/21/2018	3/30/2016	1/13/2017	N/A	N/A

MPB CD-3A – Long Lead Procurement for site preparation and long lead procurements
MPB CD-3B – Long Lead Procurements
MPB CD-3C – Cancelled as reflected in the FY 2018 CPDS
Substation CD-3A – Cancelled as reflected in the FY 2018 CPDS

[a] The current federal assessment estimates are aligned with the FY 2025 FYNSP until the project is re-baselined.

Project Cost History

Table 3: Uranium Processing Facility Project (06-D-141) Financial Data
($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2011	351,149	935,000-1,604,000	1,124,000-1,928,000	276,000-472,000	TBD	TBD	1,400,000-3,500,000
FY 2012	528,690	3,174,779-5,320,310	3,703,000-5,849,000	497,000-651,000	N/A	497,000-651,000	4,200,000-6,500,000
FY 2013	566,192	3,136,808-5,150,808	3,703,000-5,717,000	497,000-783,000	N/A	497,000-783,000	4,200,000-6,500,000
FY 2014	1,164,000	TBD	TBD	TBD	N/A	TBD	TBD
FY 2015	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2016	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2017	1,880,000	4,103,000	5,983,000	517,000	0	517,000	6,500,000
FY 2018	1,926,000	4,148,500	6,074,500	425,500	0	425,500	6,500,000
FY 2019	1,855,809	4,463,724	6,319,533	180,467	0	180,467	6,500,000
FY 2020	1,838,000	4,283,337	6,121,337	378,663	0	378,663	6,500,000
FY 2021	1,838,000	4,283,337	6,121,337	378,663	0	378,663	6,500,000
FY 2022	1,838,000	4,283,337	6,121,337	378,663	0	378,663	6,500,000
FY 2023	1,838,000	4,283,337	6,121,337	378,663	0	378,663	6,500,000
FY 2024	1,838,000	6,356,467	8,194,467	378,663	0	378,663	8,500,000-8,950,000[a]
FY 2025	1,838,000	7,122,504	8,960,504	378,663	0	378,663	9,339,167[b]

Table 3.1: Site Readiness Subproject (06-D-141-01) Financial Data
($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2015	N/A	64,000	64,000	1,000	N/A	1,000	65,000
FY 2016	0	64,000	64,000	1,000	N/A	1,000	65,000
FY 2017	0	43,277	43,277	0	0	0	43,277
FY 2018	0	43,277	43,277	0	0	0	43,277
FY 2019	0	43,714	43,714	0	0	0	43,714

Table 3.2: Site Infrastructure and Services Subproject (06-D-141-05) Financial Data
($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2015	N/A	58,000	58,000	1,500	N/A	1,500	59,500
FY 2016	N/A	84,500	84,500	500	N/A	500	85,000
FY 2017	0	78,000	78,000	500	0	500	78,500
FY 2018	0	78,000	78,000	500	0	500	78,500
FY 2019	0	78,000	78,000	500	0	500	78,500
FY 2020	0	60,500	60,500	0	0	0	60,500

[a] FY 2024 Budget Authority assumptions are based on the FY 2024 President's Budget Request.

[b] The current federal assessment estimates are aligned with the FY 2025 FYNSP until the project is re-baselined.

Table 3.3: Substation Subproject (06-D-141-07) Financial Data
($K)[a]

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2017	0	48,000	48,000	2,000	0	2,000	50,000
FY 2018	0	60,000	60,000	0	0	0	60,000
FY 2019	0	60,000	60,000	0	0	0	60,000
FY 2020	0	60,000	60,000	0	0	0	60,000
FY 2021	0	48,568	48,568	0	0	0	48,568
FY 2022	0	43,800	43,800	0	0	0	43,800

Table 3.4: Mechanical Electrical Building Subproject (06-D-141-06) Financial Data
($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2017	0	540,000	540,000	60,000	0	60,000	600,000
FY 2018	0	284,000	284,000	0	0	0	284,000
FY 2019	0	283,917	283,917	83	0	83	284,000
FY 2020	0	282,980	282,980	1,020	0	1,020	284,000
FY 2021	0	282,980	282,980	1,020	0	1,020	284,000
FY 2022	0	282,980	282,980	1,020	0	1,020	284,000
FY 2023	0	307,116	307,116	1,020	0	1,020	308,136[b]

Table 3.5: Process Support Facilities Subproject (06-D-141-08) Financial Data
($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2017	0	55,000	55,000	5,000	0	5,000	60,000
FY 2018	0	111,000	111,000	10,000	0	10,000	121,000
FY 2019	0	116,702	116,702	4,298	0	4,298	121,000
FY 2020	0	118,000	118,000	22,000	0	22,000	140,000
FY 2021	0	118,000	118,000	22,000	0	22,000	140,000
FY 2022	0	118,000	118,000	22,000	0	22,000	140,000
FY 2023	0	118,000	118,000	22,000	0	22,000	140,000
FY 2024	0	172,000	172,000	22,000	0	22,000	194,000
FY 2025	0	172,000	172,000	22,000	0	22,000	194,000

[a] Includes $16.2M of savings from the Substation Subproject which has been redeployed to cover a TPC increase in the MEB subproject.

[b] MEB TPC changed to align with CD-4 documentation. Tables shows actuals.

Table 3.6: Salvage and Accountability Building Subproject (06-D-141-09) Financial Data
($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2017	0	1,200,000	1,200,000	130,000	0	130,000	1,330,000
FY 2018	0	1,060,250	1,060,250	25,000	0	25,000	1,085,250
FY 2019	0	1,013,761	1,013,761	16,239	0	16,239	1,030,000
FY 2020	0	1,105,000	1,105,000	75,000	0	75,000	1,180,000
FY 2021	0	1,105,000	1,105,000	75,000	0	75,000	1,180,000
FY 2022	0	1,105,000	1,105,000	75,000	0	75,000	1,180,000
FY 2023	0	1,105,000	1,105,000	75,000	0	75,000	1,180,000
FY 2024	0	1,595,403	1,595,403	75,000	0	75,000	1,670,403
FY 2025	0	1,801,762	1,801,762	75,000	0	75,000	1,876,762[a]

Table 3.7: Main Process Building Subproject (06-D-141-04) Financial Data
($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2015	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2016	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2017	1,880,000	2,138,723	4,018,723	319,500	0	319,500	4,338,223
FY 2018	1,926,000	2,511,973	4,437,973	390,000	0	390,000	4,827,973
FY 2019	1,855,809	2,867,630	4,723,439	159,347	0	159,347	4,882,786
FY 2020	1,838,000	2,613,143	4,451,143	280,643	0	280,643	4,731,786
FY 2021	1,838,000	2,613,143	4,451,143	280,643	0	280,643	4,731,786
FY 2022	1,838,000	2,613,143	4,451,143	280,643	0	280,643	4,731,786
FY 2023	1,838,000	2,603,343	4,441,343	280,643	0	280,643	4,721,986[b]
FY 2024	1,838,000	4,132,070	5,970,070	280,643	0	280,643	6,250,713
FY 2025	1,838,000	4,693,612	6,513,612	280,643	0	280,643	6,812,555[c]

2. Project Scope and Justification

Scope

The UPF Project is a design and construction project. The UPF Project consists of a series of industrial and nuclear buildings and supporting infrastructure. It is a major system acquisition that was selected in the Record of Decision for the Complex Transformation Supplemental Programmatic Environmental Impact Statement to ensure the long-term viability, safety, and security of the Enriched Uranium (EU) capability at the Y-12 National Security Complex. The UPF consists of 6 buildings, totaling 568,524 square feet. The UPF project focuses on modernizing uranium processing capabilities at Y-12 to reduce program and safety risk. The UPF project provides new buildings to replace the Building 9212 capabilities for Highly Enriched Uranium (HEU) casting, oxide production, recovery, decontamination, and assay. Coordination between Headquarters Office of Infrastructure, the Uranium Program Manager, the NNSA Production Office (NPO), and the Y-12 Acquisition and Project Management Office (APMO) is essential as the uranium mission strategy and associated implementation plans define how the uranium capabilities are transitioned, relocated, sustained, and/or replaced.

The goals and objectives of the UPF Project are to support the following modernization strategy:

- Ensure the long-term capability and improve the reliability of EU operations;
- Replace deteriorating, end-of-life buildings with modern manufacturing buildings;

[a] The current federal assessment estimates are aligned with the FY 2025 FYNSP until the projected is re-baselined.
[b] Reflects a reduction in the MPB Construction cost as recovery of unearned fee to cover an increase in the MEB Subproject.
[c] The current federal assessment estimates are NNSA's best estimates until the projected is re-baselined.

- Significantly improve the health and safety posture for workers and the public by replacing administrative controls with engineered controls to manage the risks related to worker safety, criticality safety, fire protection, and environmental compliance.

The UPF project consists of the following subprojects:

Site Readiness Subproject (06-D-141-01): The Site Readiness Subproject scope included Bear Creek Road relocation, including a bridge overpass of the haul road; installation of potable water lines paralleling the new road; electrical line demolition to make way for the road and clear the construction site; electrical line and communication cable installation; preparation of the West Borrow area to receive excess-soil and preparation and maintenance of a spoil area for wet soil; extension of an existing haul road for access to the construction site; and jack-and-bore installation of casings for future utilities. The Site Readiness Subproject completed in February 2015.

Site Infrastructure and Services (SIS) Subproject (06-D-141-05): The SIS Subproject scope included demolition of Building 9107 and its hillside, installation of haul road security features, completion of a sedimentation basin, a concrete batch plant, and completion of the Construction Support Building, which is 66,000 square feet. The SIS Subproject completed in February 2018.

Substation Subproject (06-D-141-07): The Substation Subproject provided for the installation of the 161 kilovolt (kV) Main Electrical Substation for the UPF Project and capacity for most of the rest of the Y-12 plant. The Substation provides electrical power from the Tennessee Valley Authority (TVA) 161kV transmission system. The Substation Subproject includes all equipment, facilities, and structures needed for a fully operational substation. The Substation Subproject completed in December 2019.

Mechanical Electrical Building (MEB) Subproject (06-D-141-06): The MEB Subproject constructed a 66,384 square feet facility and installed the utility equipment and support systems required by both the MPB and the SAB. The MEB is a stand-alone building housing mechanical, electrical, heating, ventilation, air conditioning, utility equipment, and support systems. The MEB is constructed to nonnuclear commercial industrial standards. This subproject includes a leased warehouse and fabrication facility; a cooling tower; and an onsite warehouse. The MEB Subproject completed in July 2022.

Process Support Facilities (PSF) Subproject (06-D-141-08): The PSF Subproject will construct a 23,914 square foot building and provide facilities for instrument air, demineralized water, waste management, and chemical and gas storage needed to support the MPB and SAB. No change in scope since the previous Request.

Salvage and Accountability Building (SAB) Subproject (06-D-141-09): The SAB Subproject consists of two buildings totaling 160,113 square feet that will contain the following processes: waste preparation, decontamination, nondestructive analysis, the clean and contaminated shops, chemical recovery, calcination and leaching, electronics and calibration maintenance, filter room, and personnel-related rooms. The SAB will be constructed to standards commensurate with the radioactive hazard and security requirements for the materials and processes contained within. This subproject includes support buildings including a fire tank pump building as well as the Personnel Support Building which provides personnel access and monitoring station, truck bay, loading dock, and material access. Long lead equipment purchases associated with the SAB Subproject are allocated to the SAB TPC. No change in scope since the previous Request.

Long Lead Procurements, CD-3B: Included long lead gloveboxes, skids, and select long lead procurements for structural steel, rebar, embeds, and specialty items associated with SAB.

Main Process Building (MPB) Subproject (06-D-141-04): The MPB Subproject consists of a nuclear building totaling 252,113 square feet that will house the casting and oxide production capabilities. It also contains nondestructive analysis and waste preparations, furnaces and repacking, and spaces needed for process support such as the shift manager's office, restrooms, and other personnel-related rooms. The MPB will be constructed to nuclear standards commensurate with high-hazard materials and security for the processes to be carried out within. The MPB Subproject will include the construction of the Highly Enriched Uranium Materials Facility (HEUMF) connector, and the new Perimeter Intrusion Detection and Assessment

System surrounding the UPF campus and support buildings. Design costs for the UPF project are included in the MPB Subproject baseline, as design costs are not tracked for each individual UPF subproject. No change in scope since the previous Request.

Site Preparation and Long Lead Procurements, CD-3A: Included excavation and fill for the MPB, SAB, and the MEB; installation of temporary facilities, power, storm water and sanitary sewers; and long lead procurements of tower cranes and rebar for the MEB slab.

Long Lead Procurements, CD-3B: Included long lead gloveboxes, skids, and select long lead procurements for structural steel, rebar, embeds, and specialty items associated with MPB.

Justification and Mission Need

The UPF Project is needed to ensure the long-term viability, safety, and security of the Enriched Uranium (EU) capability in the United States. The UPF Project will support the Nation's nuclear weapons stockpile, down blending of EU in support of nonproliferation, and provide uranium as feedstock for fuel for naval reactors. Currently, these capabilities reside in aged Manhattan Project-era facilities. There is substantial risk that the existing facilities will continue to deteriorate to the point of significant impact to Defense Programs, Defense Nuclear Nonproliferation, and Naval Reactors programs. The impacts could result in loss of the U.S. capability to maintain the nuclear weapons stockpile through life extension programs, shutdown of the U.S. Navy nuclear powered fleet due to lack of EU fuel feedstock materials, and impact to the Defense Nuclear Nonproliferation program's ability to reduce the enrichment level of foreign research reactors through supply of lower enrichment fuels manufactured at Y-12. The risk of inadvertent or accidental shutdown of the existing facilities is high and may occur prior to completion and startup of the UPF Project.

The UPF Mission Need Statement approved in December 2004, states that safe, efficient, and secure enriched uranium processing capabilities are needed within the Nuclear Weapons Complex to meet the mission of the DOE's NNSA. The UPF Project is needed to ensure the long-term viability, safety, and security of the EU capability in the United States. The UPF Mission Need was reexamined at each of the subsequent CD phases and remains valid.

Key Performance Parameters (KPPs)

The Threshold KPPs represent the minimum acceptable performance that the project must achieve. Achievement of the Threshold KPPs will be a prerequisite for approval of CD-4, Project Completion. The Objective KPPs represent the desired project performance.

Table 4: Key Performance Parameters

Performance Measure	Threshold	Objective
UPF supports phasing out mission dependency on 9212	Threshold Performance Parameters are identified in the Classified Project Requirements Document	Objective Performance Parameters are identified in the Classified Project Requirements Document

3. Financial Schedule

UPF funding is appropriated at the Overall Project level (06-D-141) and is allocated to the subprojects in the tables below.

Table 5: Uranium Processing Facility Project (06-D-141)[a]
($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2006	5,000	5,000	0
FY 2007	5,000	5,000	677
FY 2008	38,583	38,583	33,950
FY 2009	90,622	90,622	79,184
FY 2010	94,000	94,000	80,959
FY 2011	115,271	115,271	109,855
FY 2012	160,194	160,109	170,700
FY 2013	269,069	269,026	192,389
FY 2014	301,886	301,886	198,448
FY 2015	270,929	269,823	220,761
FY 2016	298,000	297,978	309,154
FY 2017	179,884	179,748	326,205
FY 2018	9,562	10,954	115,718
Total Design	**1,838,000**	**1,838,000**	**1,838,000**
Construction			
FY 2013	43,714	43,714	5,242
FY 2014	0	0	25,928
FY 2015	60,500	60,500	20,853
FY 2016	132,000	132,000	32,270
FY 2017	395,116	395,116	89,918
FY 2018	653,438	653,438	298,467
FY 2019	701,980	701,853	568,246
FY 2020	740,000	739,973	826,841
FY 2021	718,500	718,500	890,993
FY 2022	586,500	586,500	798,037
FY 2023	544,850	542,986	764,017
FY 2024	710,000	710,154	727,380
FY 2025	735,000	735,000	802,880
FY 2026	546,021	546,021	617,673
FY 2027	303,885	303,885	346,985
FY 2028	251,000	252,864	182,432
FY 2029	0	0	74,342
FY 2030	0	0	50,000
Total Construction	**7,122,504**	**7,122,504**	**7,122,504**

[a] The current federal assessment estimates are NNSA's best estimates until the project is re-baselined.

	Budget Authority (Appropriations)	Obligations	Costs
TEC			
FY 2006	5,000	5,000	0
FY 2007	5,000	5,000	677
FY 2008	38,583	38,583	33,950
FY 2009	90,622	90,622	79,184
FY 2010	94,000	94,000	80,959
FY 2011	115,271	115,271	109,855
FY 2012	160,194	160,109	170,700
FY 2013	312,783	312,740	197,631
FY 2014	301,886	301,886	224,376
FY 2015	331,429	330,323	241,614
FY 2016	430,000	429,978	341,424
FY 2017	575,000	574,864	416,123
FY 2018	663,000	664,392	414,185
FY 2019	701,980	701,853	568,246
FY 2020	740,000	739,973	826,841
FY 2021	718,500	718,500	890,993
FY 2022	586,500	586,500	798,037
FY 2023	544,850	542,986	764,017
FY 2024	710,000	710,154	727,380
FY 2025	735,000	735,000	802,880
FY 2026	546,021	546,021	617,673
FY 2027	303,885	303,885	346,985
FY 2028	251,000	252,864	182,432
FY 2029	0	0	74,342
FY 2030	0	0	50,000
Total TEC	**8,960,504**	**8,960,504**	**8,960,504**
Other Project Costs (OPC)			
FY 2005	12,113	12,113	12,113
FY 2006	7,809	7,809	7,809
FY 2007	10,082	10,082	10,082
FY 2008	11,730	11,730	11,730
FY 2009	14,000	14,000	14,000
FY 2010	20,500	20,500	20,500
FY 2011	18,409	18,409	18,409
FY 2012	0	0	0

($K)

	Budget Authority (Appropriations)	Obligations	Costs
FY 2013	0	0	0
FY 2014	0	0	0
FY 2015	0	0	0
FY 2016	0	0	0
FY 2017	0	0	0
FY 2018	0	0	0
FY 2019	1,020	1,020	0
FY 2020	5,000	5,000	1,083
FY 2021	31,500	31,500	2,631
FY 2022	13,500	13,500	31,861
FY 2023	17,000	17,000	29,380
FY 2024	50,000	50,000	39,121
FY 2025	65,000	65,000	39,000
FY 2026	50,000	50,000	39,000
FY 2027	51,000	51,000	47,000
FY 2028	0	0	31,000
FY 2029	0	0	13,444
FY 2030	0	0	10,500
Total, OPC	**378,663**	**378,663**	**378,663**
Total Project Costs (TPC)			
FY 2005	12,113	12,113	12,113
FY 2006	12,809	12,809	7,809
FY 2007	15,082	15,082	10,759
FY 2008	50,313	50,313	45,680
FY 2009	104,622	104,622	93,184
FY 2010	114,500	114,500	101,459
FY 2011	133,680	133,680	128,264
FY 2012	160,194	160,109	170,700
FY 2013	312,783	312,740	197,631
FY 2014	301,886	301,886	224,376
FY 2015	331,429	330,323	241,614
FY 2016	430,000	429,978	341,424
FY 2017	575,000	574,864	416,123
FY 2018	663,000	664,392	414,185

($K)

	Budget Authority (Appropriations)	Obligations	Costs
FY 2019	703,000	702,873	568,246
FY 2020	745,000	744,973	827,924
FY 2021	750,000	750,000	893,624
FY 2022	600,000	600,000	829,898
FY 2023	561,850	559,986	793,397
FY 2024	760,000	760,154	766,501
FY 2025	800,000	800,000	841,880
FY 2026	596,021	596,021	656,673
FY 2027	354,885	354,885	393,985
FY 2028	251,000	252,864	213,432
FY 2029	0	0	87,786
FY 2030	0	0	60,500
Total TPC [a]	**9,339,167**	**9,339,167**	**9,339,167**

[a] The current federal assessment estimates are NNSA's best estimates until the project is re-baselined.

Table 5.1: Site Readiness Subproject (06-D-141-01) Financial Schedule
($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2017	0	0	0
Total Design	**0**	**0**	**0**
Construction			
FY 2013	43,714	43,714	5,242
FY 2014	0	0	25,928
FY 2015	0	0	12,107
FY 2016	0	0	437
FY 2017	0	0	0
Total Construction	**43,714**	**43,714**	**43,714**
TEC			
FY 2013	43,714	43,714	5,242
FY 2014	0	0	25,928
FY 2015	0	0	12,107
FY 2016	0	0	437
FY 2017	0	0	0
Total TEC	**43,714**	**43,714**	**43,714**
Other Project Costs (OPC)			
FY 2017	0	0	0
Total, OPC	**0**	**0**	**0**
Total Project Costs (TPC)			
FY 2013	43,714	43,714	5,242
FY 2014	0	0	25,928
FY 2015	0	0	12,107
FY 2016	0	0	437
FY 2017	0	0	0
Total TPC	**43,714**	**43,714**	**43,714**

Table 5.2: Site Infrastructure and Services Subproject (06-D-141-05) [a]

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2016	0	0	0
FY 2017	0	0	0
Total Design	**0**	**0**	**0**
Construction			
FY 2015	60,500	60,500	8,746
FY 2016	0	0	26,875
FY 2017	0	0	23,166
FY 2018	0	0	1,713
FY 2019	0	0	0
Total Construction	**60,500**	**60,500**	**60,500**
TEC			
FY 2015	60,500	60,500	8,746
FY 2016	0	0	26,875
FY 2017	0	0	23,166
FY 2018	0	0	1,713
FY 2019	0	0	0
Total TEC	**60,500**	**60,500**	**60,500**
Other Project Costs (OPC)			
FY 2016	0	0	0
FY 2017	0	0	0
Total, OPC	**0**	**0**	**0**
Total Project Costs (TPC)			
FY 2015	60,500	60,500	8,746
FY 2016	0	0	26,875
FY 2017	0	0	23,166
FY 2018	0	0	1,713
FY 2019	0	0	0
Total TPC	**60,500**	**60,500**	**60,500**

[a] Subproject received CD-4 approval in FY 2018 and completed under budget; baseline was $78,000,000, actual cost was $60,500,000.

Table 5.3: Substation Subproject (06-D-141-07)[a]
($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2016	0	0	0
FY 2017	0	0	0
Total Design	**0**	**0**	**0**
Construction			
FY 2016	43,800	43,800	0
FY 2017	0	0	11,064
FY 2018	0	0	26,101
FY 2019	0	0	6,635
FY 2020	0	0	0
Total Construction	**43,800**	**43,800**	**43,800**
TEC			
FY 2016	43,800	43,800	0
FY 2017	0	0	11,064
FY 2018	0	0	26,101
FY 2019	0	0	6,635
FY 2020	0	0	0
Total TEC	**43,800**	**43,800**	**43,800**
Other Project Costs (OPC)			
FY 2016	0	0	0
FY 2017	0	0	0
Total, OPC	**0**	**0**	**0**
Total Project Costs (TPC)			
FY 2016	43,800	43,800	0
FY 2017	0	0	11,064
FY 2018	0	0	26,101
FY 2019	0	0	6,635
FY 2020	0	0	0
Total TPC	**43,800**	**43,800**	**43,800**

[a] The approximately $16,200,000 of cost savings from the Substation Subproject has been redeployed to the MEB subproject to cover a TPC increase.

Table 5.4: Mechanical Electrical Building Subproject (06-D-141-06)[a]

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2016	0	0	0
FY 2017	0	0	0
Total Design	**0**	**0**	**0**
Construction			
FY 2016	16,200	16,200	0
FY 2017	55,000	55,000	1,425
FY 2018	160,000	160,000	35,061
FY 2019	67,980	67,980	61,043
FY 2020	0	0	107,361
FY 2021	0	0	68,093
FY 2022	9,800	9,800	32,481
FY 2023	-1,864	-1,864	1,652
Total Construction	**307,116**	**307,116**	**307,116**
TEC			
FY 2016	16,200	16,200	0
FY 2017	55,000	55,000	1,425
FY 2018	160,000	160,000	35,061
FY 2019	67,980	67,980	61,043
FY 2020	0	0	107,361
FY 2021	0	0	68,093
FY 2022	9,800	9,800	32,481
FY 2023[a]	-1,864	-1,864	1,652
Total TEC	**307,116**	**307,116**	**307,116**
Other Project Costs (OPC)			
FY 2019	1,020	1,020	0
FY 2020	0	0	28
FY 2021	0	0	880
FY 2022	0	0	112
FY 2023	0	0	0
Total, OPC	**1,020**	**1,020**	**1,020**
Total Project Costs (TPC)			
FY 2016	16,200	16,200	0
FY 2017	55,000	55,000	1,425
FY 2018	160,000	160,000	35,061
FY 2019	69,000	69,000	61,043
FY 2020	0	0	107,389
FY 2021	0	0	68,973
FY 2022	9,800	9,800	32,593
FY 2023	-1,864	-1,864	1,652
Total TPC	**308,136**	**308,136**	**308,136**

[a] FY 2023 MEB BA changed to align total BA with MEB total cost at CD-4.

Table 5.5: Process Support Facilities Subproject (06-D-141-08)

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2016	0	0	0
FY 2017	0	0	0
Total Design	**0**	**0**	**0**
Construction			
FY 2018	15,000	15,000	2,139
FY 2019	30,000	30,000	6,853
FY 2020	54,000	54,000	18,539
FY 2021	19,000	19,000	36,535
FY 2022	0	0	47,214
FY 2023	36,000	36,000	15,597
FY 2024	18,000	18,000	39,123
FY 2025	0	0	5,901
FY 2026	0	0	99
Total Construction	**172,000**	**172,000**	**172,000**
TEC			
FY 2016	0	0	0
FY 2017	0	0	0
FY 2018	15,000	15,000	2,139
FY 2019	30,000	30,000	6,853
FY 2020	54,000	54,000	18,539
FY 2021	19,000	19,000	36,535
FY 2022	0	0	47,214
FY 2023	36,000	36,000	15,597
FY 2024	18,000	18,000	39,123
FY 2025	0	0	5,901
FY 2026	0	0	99
Total TEC	**172,000**	**172,000**	**172,000**
Other Project Costs (OPC)			
FY 2020	1,000	1,000	0
FY 2021	21,000	21,000	0
FY 2022	0	0	12,000
FY 2023	0	0	10,000
FY 2024	0	0	0
FY 2025	0	0	0
FY 2026	0	0	0
Total, OPC	**22,000**	**22,000**	**22,000**
Total Project Costs (TPC)			
FY 2016	0	0	0
FY 2017	0	0	0
FY 2018	15,000	15,000	2,139
FY 2019	30,000	30,000	6,853
FY 2020	55,000	55,000	18,539
FY 2021	40,000	40,000	36,535
FY 2022	0	0	59,214
FY 2023	36,000	36,000	25,597
FY 2024	18,000	18,000	39,123
FY 2025	0	0	5,901
FY 2026	0	0	99
Total TPC	**194,000**	**194,000**	**194,000**

Table 5.6: Salvage and Accountability Building Subproject (06-D-141-09)
($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2016	0	0	0
FY 2017	0	0	0
Total Design	**0**	**0**	**0**
Construction			
FY 2018	195,000	195,000	56,194
FY 2019	253,000	253,000	144,702
FY 2020	250,000	250,000	227,861
FY 2021	197,000	197,000	236,174
FY 2022	198,000	198,000	224,217
FY 2023	68,003	68,003	254,557
FY 2024	154,000	154,000	154,214
FY 2025	150,000	150,000	170,105
FY 2026	177,221	177,221	142,745
FY 2027	93,221	93,221	106,271
FY 2028	66,317	66,317	54,479
FY 2029	0	0	20,243
FY 2030	0	0	10,000
Total Construction	**1,801,762**	**1,801,762**	**1,801,762**
TEC			
FY 2016	0	0	0
FY 2017	0	0	0
FY 2018	195,000	195,000	56,194
FY 2019	253,000	253,000	144,702
FY 2020	250,000	250,000	227,861
FY 2021	197,000	197,000	236,174
FY 2022	198,000	198,000	224,217
FY 2023	68,003	68,003	254,557
FY 2024	154,000	154,000	154,214
FY 2025	150,000	150,000	170,105
FY 2026	177,221	177,221	142,745
FY 2027	93,221	93,221	106,271
FY 2028	66,317	66,317	54,479
FY 2029	0	0	20,243
FY 2030	0	0	10,000
Total TEC	**1,801,762**	**1,801,762**	**1,801,762**

	($K)		
	Budget Authority (Appropriations)	**Obligations**	**Costs**
Other Project Costs (OPC)			
FY 2020	2,000	2,000	35
FY 2021	5,000	5,000	56
FY 2022	2,000	2,000	9,444
FY 2023	2,000	2,000	8,844
FY 2024	8,000	8,000	9,121
FY 2025	25,000	25,000	9,000
FY 2026	10,000	10,000	9,000
FY 2027	21,000	21,000	17,000
FY 2028	0	0	11,000
FY 2029	0	0	1,000
FY 2030	0	0	500
Total, OPC	**75,000**	**75,000**	**75,000**
Total Project Costs (TPC)			
FY 2016	0	0	0
FY 2017	0	0	0
FY 2018	195,000	195,000	56,194
FY 2019	253,000	253,000	144,702
FY 2020	252,000	252,000	227,896
FY 2021	202,000	202,000	236,230
FY 2022	200,000	200,000	233,661
FY 2023	70,003	70,003	263,401
FY 2024	162,000	162,000	163,335
FY 2025	175,000	175,000	179,105
FY 2026	187,221	187,221	151,745
FY 2027	114,221	114,221	123,271
FY 2028	66,317	66,317	65,479
FY 2029	0	0	21,243
FY 2030	0	0	10,500
Total TPC[a]	**1,876,762**	**1,876,762**	**1,876,762**

[a] The current federal assessment estimates are NNSA's best estimates until the project is re-baselined.

Table 5.7: Main Process Building Subproject (06-D-141-04)

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2006	5,000	5,000	0
FY 2007	5,000	5,000	677
FY 2008	38,583	38,583	33,950
FY 2009	90,622	90,622	79,184
FY 2010	94,000	94,000	80,959
FY 2011	115,271	115,271	109,855
FY 2012	160,194	160,109	170,700
FY 2013	269,069	269,026	192,389
FY 2014 [a]	301,886	301,886	198,448
FY 2015 [b]	270,929	269,823	220,761
FY 2016	298,000	297,978	309,154
FY 2017	179,884	179,748	326,205
FY 2018	9,562	10,954	115,718
Total Design	**1,838,000**	**1,838,000**	**1,838,000**
Construction			
FY 2016	72,000	72,000	4,958
FY 2017	340,116	340,116	54,263
FY 2018	283,438	283,438	177,259
FY 2019	351,000	350,873	349,013
FY 2020	436,000	435,973	473,080
FY 2021	502,500	502,500	550,191
FY 2022	378,700	378,700	494,125
FY 2023	442,711	440,847	492,211
FY 2024	538,000	538,154	534,043
FY 2025	585,000	585,000	626,874
FY 2026	368,800	368,800	474,829
FY 2027	210,664	210,664	240,714
FY 2028	184,683	186,547	127,953
FY 2029	0	0	54,099
FY 2030	0	0	40,000
Total Construction	**4,693,612**	**4,693,612**	**4,693,612**
TEC			
FY 2006	5,000	5,000	0
FY 2007	5,000	5,000	677
FY 2008	38,583	38,583	33,950

[a] In FY 2014, $5,000,000 in prior year funding was reprogrammed from 06-D-141, Uranium Processing Facility to Maintenance and Repair of Facilities at Y-12. Change from FY 2018 CPDS also reflects a rescission of $2,114,341.

[b] In FY 2016, $2,885,659 in prior year funding was reprogrammed from 06-D-141, Uranium Processing Facility to Uranium Sustainment Storage under the Directed Stockpile Work program. Change from FY 2018 CPDS also reflects a rescission of $685,002.

	($K)		
	Budget Authority (Appropriations)	**Obligations**	**Costs**
FY 2009	90,622	90,622	79,184
FY 2010	94,000	94,000	80,959
FY 2011	115,271	115,271	109,855
FY 2012	160,194	160,109	170,700
FY 2013	269,069	269,026	192,389
FY 2014	301,886	301,886	198,448
FY 2015	270,929	269,823	220,761
FY 2016	370,000	369,978	314,112
FY 2017	520,000	519,864	380,468
FY 2018	293,000	294,392	292,977
FY 2019	351,000	350,873	349,013
FY 2020	436,000	435,973	473,080
FY 2021	502,500	502,500	550,191
FY 2022	378,700	378,700	494,125
FY 2023	442,711	440,847	492,211
FY 2024	538,000	538,154	534,043
FY 2025	585,000	585,000	626,874
FY 2026	368,800	368,800	474,829
FY 2027	210,664	210,664	240,714
FY 2028	184,683	186,547	127,953
FY 2029	0	0	54,099
FY 2030	0	0	40,000
Total TEC	**6,531,612**	**6,531,612**	**6,531,612**
Other Project Costs (OPC)			
FY 2005	12,113	12,113	12,113
FY 2006	7,809	7,809	7,809
FY 2007	10,082	10,082	10,082
FY 2008	11,730	11,730	11,730
FY 2009	14,000	14,000	14,000
FY 2010	20,500	20,500	20,500
FY 2011	18,409	18,409	18,409
FY 2012	0	0	0
FY 2013	0	0	0
FY 2014	0	0	0
FY 2015	0	0	0
FY 2016	0	0	0
FY 2017	0	0	0

	Budget Authority (Appropriations)	Obligations	Costs
		($K)	
FY 2018	0	0	0
FY 2019	0	0	0
FY 2020	2,000	2,000	1,020
FY 2021	5,500	5,500	1,695
FY 2022	11,500	11,500	10,305
FY 2023	15,000	15,000	10,536
FY 2024	42,000	42,000	30,000
FY 2025	40,000	40,000	30,000
FY 2026	40,000	40,000	30,000
FY 2027	30,000	30,000	30,000
FY 2028	0	0	20,000
FY 2029	0	0	12,444
FY 2030	0	0	10,000
Total, OPC	**280,643**	**280,643**	**280,643**
Total Project Costs (TPC)			
FY 2005	12,113	12,113	12,113
FY 2006	12,809	12,809	7,809
FY 2007	15,082	15,082	10,759
FY 2008	50,313	50,313	45,680
FY 2009	104,622	104,622	93,184
FY 2010	114,500	114,500	101,459
FY 2011	133,680	133,680	128,264
FY 2012	160,194	160,109	170,700
FY 2013	269,069	269,026	192,389
FY 2014	301,886	301,886	198,448
FY 2015	270,929	269,823	220,761
FY 2016	370,000	369,978	314,112
FY 2017	520,000	519,864	380,468
FY 2018	293,000	294,392	292,977
FY 2019	351,000	350,873	349,013
FY 2020	438,000	437,973	474,100
FY 2021	508,000	508,000	551,886
FY 2022	390,200	390,200	504,430
FY 2023	457,711	455,847	502,747
FY 2024	580,000	580,154	564,043
FY 2025	625,000	625,000	656,874
FY 2026	408,800	408,800	504,829
FY 2027	240,664	240,664	270,714
FY 2028	184,683	186,547	147,953
FY 2029	0	0	66,543
FY 2030	0	0	50,000
Total TPC[a]	**6,812,255**	**6,812,255**	**6,812,255**

[a] The current federal assessment estimates are aligned with the FY 2025 FYNSP until the project is re-baselined.

4. Details of Project Cost Estimate

Table 6: Details of UPF Project (06-D-141)

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	1,838,000	1,838,000	1,838,000
Contingency	0	0	0
Total Design	**1,838,000**	**1,838,000**	**1,838,000**
Construction			
Site Preparation	156,214	156,214	191,700
Equipment	1,696,967	1,696,967	1,370,180
Construction[a]	4,755,614	4,033,480	2,420,463
Contingency	513,709	469,806	340,300
Total Construction	**7,122,504**	**6,356,467**	**4,322,643**
Total Estimated Cost (TEC)	**8,960,504**	**8,194,467**	**6,160,643**
Contingency, TEC	*513,709*	*469,806*	*340,300*
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning	30,000	30,000	30,000
Conceptual Design	64,643	64,643	64,643
Start-up	228,820	228,820	225,000
Contingency	55,200	55,200	59,000
Total OPC	**378,663**	**378,663**	**378,643**
Contingency, OPC	*55,200*	*55,200*	*59,000*
Total Project Cost [b]	**9,339,167**	**8,573,130**	**6,539,286**
Total Contingency (TEC+OPC)	***568,909***	***525,006***	***399,300***

[a] Construction costs have increased since FY 2024 CPDS due to increases in construction durations, and system turnover and testing durations. Duration extensions caused by contractor performance and performance driven funding shortfalls.

[b] The FY 2025 FYNSP funding profile is funded at $9.34 billion, representing NNSA's current best estimate until the projected is re-baselined.

Table 6.1: Details of Site Readiness Subproject (06-D-141-01)

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	0	0	0
Contingency	0	0	0
Total Design	**0**	**0**	**0**
Construction			
Site Preparation	43,714	43,714	50,200
Equipment	0	0	0
Construction	0	0	0
Contingency	0	0	13,800
Total Construction	**43,714**	**43,714**	**64,000**
Total Estimated Cost (TEC)	**43,714**	**43,714**	**64,000**
Contingency, TEC	*0*	*0*	*13,800*
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning	0	0	0
Conceptual Design	0	0	0
Start-up	0	0	1000
Contingency	0	0	0
Total OPC	**0**	**0**	**1,000**
Contingency, OPC	*0*	*0*	*0*
Total Project Cost	**43,714**	**43,714**	**65,000**
Total Contingency (TEC+OPC)	***0***	***0***	***13,800***

Table 6.2: Details of Site Infrastructure and Services Subproject (06-D-141-05)

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	0	0	0
Contingency	0	0	0
Total Design	**0**	**0**	**0**
Construction			
Site Preparation	0	0	26,000
Equipment	0	0	0
Construction	60,500	60,500	30,000
Contingency	0	0	22,500
Total Construction	**60,500**	**60,500**	**78,500**
Total Estimated Cost (TEC)	**60,500**	**60,500**	**78,500**
Contingency, TEC	*0*	*0*	*22,500*
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning	0	0	0
Conceptual Design	0	0	0
Start-up	0	0	0
Contingency	0	0	0
Total OPC	**0**	**0**	**0**
Contingency, OPC	*0*	*0*	*0*
Total Project Cost	**60,500**	**60,500**	**78,500**
Total Contingency (TEC+OPC)	***0***	***0***	***22,500***

Table 6.3: Details of Substation Subproject (06-D-141-07)

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	0	0	0
Contingency	0	0	0
Total Design	**0**	**0**	**0**
Construction			
Site Preparation	0	0	3,000
Equipment	0	0	49,700
Construction	43,800	43,800	0
Contingency	0	0	7,300
Total Construction	**43,800**	**43,800**	**60,000**
Total Estimated Cost (TEC)	**43,800**	**43,800**	**60,000**
Contingency, TEC	*0*	*0*	*7,300*
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning	0	0	0
Conceptual Design	0	0	0
Start-up	0	0	0
Contingency	0	0	0
Total OPC	**0**	**0**	**0**
Contingency, OPC	*0*	*0*	*0*
Total Project Cost	**43,800**	**43,800**	**60,000**
Total Contingency (TEC+OPC)	***0***	***0***	***7,300***

Table 6.4: Details of Mechanical Electrical Building Subproject (06-D-141-06)

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	0	0	0
Contingency	0	0	0
Total Design	**0**	**0**	**0**
Construction			
Site Preparation	0	0	0
Equipment	86,180	86,180	86,040
Construction	220,936	222,800	159,760
Contingency	0	0	38,200
Total Construction	**307,116**	**308,980**	**284,000**
Total Estimated Cost (TEC)	**307,116**	**308,980**	**284,000**
Contingency, TEC	*0*	*0*	*38,200*
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning	0	0	0
Conceptual Design	0	0	0
Start-up	1,020	1,020	0
Contingency	0	0	0
Total OPC	**1,020**	**1,020**	**0**
Contingency, OPC	*0*	*0*	*0*
Total Project Cost	**308,136**	**310,000**	**284,000**
Total Contingency (TEC+OPC)	***0***	***0***	***38,200***
TPC from CD-4 Documentation	**309,000**		

Table 6.5: Details of Process Support Facilities Subproject (06-D-141-08)

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	0	0	0
Contingency	0	0	0
Total Design	**0**	**0**	**0**
Construction			
Site Preparation	0	0	0
Equipment	26,600	26,600	19,530
Construction	127,100	127,100	75,970
Contingency	18,300	18,300	22,500
Total Construction	**172,000**	**172,000**	**118,000**
Total Estimated Cost (TEC)	**172,000**	**172,000**	**118,000**
Contingency, TEC	*18,300*	*18,300*	*22,500*
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning	0	0	0
Conceptual Design	0	0	0
Start-up	21,800	21,800	18000
Contingency	200	200	4000
Total OPC	**22,000**	**22,000**	**22,000**
Contingency, OPC	*200*	*200*	*4,000*
Total Project Cost	**194,000**	**194,000**	**140,000**
Total Contingency (TEC+OPC)	***18,500***	***18,500***	***26,500***

Table 6.6: Details of Salvage and Accountability Building Subproject (06-D-141-09)
($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	0	0	0
Contingency	0	0	0
Total Design	**0**	**0**	**0**
Construction			
Site Preparation	0	0	0
Equipment	301,777	301,777	380,160
Construction[a]	1,370,676	1,184,317	599,840
Contingency	129,309	109,309	125,000
Total Construction	**1,801,762**	**1,595,403**	**1,105,000**
Total Estimated Cost (TEC)	**1,801,762**	**1,595,403**	**1,105,000**
Contingency, TEC	*129,309*	*109,309*	*125,000*
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning	0	0	0
Conceptual Design	0	0	0
Start-up	60,000	60,000	60,000
Contingency	15,000	15,000	15,000
Total OPC	**75,000**	**75,000**	**75,000**
Contingency, OPC	*15,000*	*15,000*	*15,000*
Total Project Cost	**1,876,762**	**1,670,403**	**1,180,000**
Total Contingency (TEC+OPC)	***144,309***	***124,309***	***140,000***

[a] Construction costs have increased since FY 2024 CPDS due to increases in construction durations, and system turnover and testing durations.

Table 6.7: Details of Main Process Building Subproject (06-D-141-04)

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	1,838,000	1,838,000	1,838,000
Contingency	0	0	0
Total Design	**1,838,000**	**1,838,000**	**1,838,000**
Construction			
Site Preparation	112,500	112,500	112,500
Equipment	1,282,410	1,282,410	834,750
Construction[a]	2,932,602	2,394,963	1,554,893
Contingency	366,100	342,197	111,000
Total Construction	**4,693,612**	**4,132,070**	**2,613,143**
Total Estimated Cost (TEC)	**6,531,612**	**5,970,070**	**4,451,143**
Contingency, TEC	*366,100*	*342,197*	*111,000*
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning	30,000	30,000	30,000
Conceptual Design	64,643	64,643	64,643
Start-up	146,000	146,000	146,000
Contingency	40,000	40,000	40,000
Total OPC	**280,643**	**280,643**	**280,643**
Contingency, OPC	*40,000*	*40,000*	*40,000*
Total Project Cost	**6,812,255**	**6,250,713**	**4,731,786**
Total Contingency (TEC+OPC)	***406,100***	***382,197***	***151,000***

[a] Construction costs have increased since FY 2024 CPDS due to increases in construction durations, and system turnover and testing durations.

5. Schedule of Appropriations Requests

($K)

Request Year	Type	Prior Years	FY2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Total
FY 2013	TEC	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	OPC	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	TPC	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
FY 2014	TEC	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	OPC	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	TPC	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
FY 2015	TEC	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	OPC	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	TPC	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
FY 2016	TEC	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	OPC	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	TPC	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
FY 2017	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TPC	5,700,096	500,000	250,000	49,904	0	0	0	6,500,000
FY 2018	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TPC	6,050,096	385,000	64,904	0	0	0	0	6,500,000
FY 2019	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TPC	6,035,411	300,000	159,000	5,589	0	0	0	6,500,000
FY 2020	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TPC	6,035,411	300,000	164,589	0	0	0	0	6,500,000
FY 2021	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TPC	6,035,411	300,000	164,589	0	0	0	0	6,500,000
FY 2022	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TPC	5,939,411	0	0	0	0	0	0	5,939,411
FY 2023	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TPC	6,015,411	362,000	122,589	0	0	0	0	6,500,000
FY 2024	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TPC	6,015,411	565,106	760,000	550,000	400,000	225,000	57,613	8,573,130
FY 2025	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TPC [a]	6,015,411	561,850	760,000	800,000	596,021	354,885	251,000	9,339,167

[a] The current federal assessment estimates are aligned with the FY 2025 FYNSP until the project is re-baselined.

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy	9/30/2030
Expected Useful Life	50 years
Expected Future Start of D&D of this capital asset (fiscal quarter)	9/30/2080

Related Funding Requirements
(Budget Authority in Billions of Dollars)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations and Maintenance	$0.466	$0.466	$32.915	$32.915

7. D&D Information

The new area being constructed in this project is replacing existing facilities.

New Area being constructed at Y-12 National Security Complex	568,524 square feet
Area of D&D in this project at Y-12 National Security Complex	11,000 square feet[a]
Area at Y-12 National Security Complex to be transferred, sold, and/or D&D outside the project, including area previously "banked"	1,202,000 square feet
Area of D&D of this project at other sites	0
Area at other sites to be transferred, sold, and/or D&D outside the project, including area previously "banked"	0
Total Area Eliminated	N/A

8. Acquisition Approach

The NNSA Federal Project Director and the Integrated Project Team are responsible for the execution of the project. The Y-12 M&O contractor is the designated design authority. Designated officials within the Office of Defense Programs (NA-10) are responsible for defining program requirements and identifying project scope changes. The Office of Infrastructure is responsible for providing support for alternative studies and serves as the lead NNSA office for design and construction of the project.

The UPF Project construction scope is being performed under firm fixed price contracts or subcontracts along with cost-plus contracts as determined to be the best value for the government. The Department is administering Architect-Engineer and construction contracts utilizing the M&O contract and stand-alone contract vehicles. The United States Army Corps of Engineers (USACE) and Tennessee Valley Authority have had acquisition and project management responsibility for appropriate scopes of work as determined by the Department.

[a] Building 9107.

22-D-513 Power Sources Capability (PSC) Facility
Sandia National Laboratories, Albuquerque, New Mexico
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary: The FY 2025 Request for the Power Sources Capability (PSC) is $50,000,000. The FY 2025 Request continues to support execution of long lead equipment procurements and a subcontract for early site preparation work and supports the start of facility construction.

This Construction Project Data Sheet (CPDS) is an update of the Fiscal Year (FY) 2024 CPDS and does not include a new start for the budget year. The most recent DOE O 413.3B approved Critical Decision is CD-1, *Approve Alternative Selection and Cost Range,* which was approved on December 29, 2022, with a cost range of $344,000,000 to $400,000,000 and a CD-4 date of 3Q FY 2030. At CD-1 approval NNSA established a top-end of the range limit of $400M for the project funding. The CD-1 top-end range estimate included contemporary escalation rates.

A Federal Project Director has been assigned to this project and approved this CPDS. Non-Nuclear Capability Modernization provides funding for Other Project Costs.

Significant Changes:
Due to project re-planning as the preliminary design was begun and after the receipt of the 30% design submission, the spend plan for PSC has been updated. As a result of the re-planning, CD-3A approval has been delayed by one year and CD-3B approval has been delayed by 6-months to optimize the execution of that scope. The Operations and Maintenance (O&M) Funding Requirements (see Section 6 below) have been revised. Due to low facility design maturity the previous annual and lifecycle cost estimates were based on actual O&M costs from the existing Building 894 facility. The current estimates are based on the proposed facility.

Critical Milestone History

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2022	07/10/2019	4Q FY 2021	1Q FY 2022	4Q FY 2023	1Q FY 2023	4Q FY 2023	N/A	4Q FY 2026
FY 2024	07/10/2019	07/14/2021	12/29/2022	3Q FY 2025	3Q FY 2025	3Q FY 2025	N/A	3Q FY 2030
FY 2025	07/10/2019	07/14/2021	12/29/2022	3Q FY 2025	3Q FY 2025	3Q FY 2025	N/A	3Q FY 2030

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range
Conceptual Design Complete – Estimated date the conceptual design will be completed
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
Final Design Complete – Estimated/Actual date the project design will be/was complete(d)
CD-3 – Approve Start of Construction
D&D Complete – N/A
CD-4 – Approve Start of Operations or Project Closeout

Fiscal Year	CD-3A[a]	CD-3B[b]
FY 2024	2Q FY 2024	2Q FY 2024
FY 2025	2Q FY 2025	4Q FY 2024

[a] CD-3A, *Approve Long-Lead Procurement*, will be used for laboratory and facility equipment.
[b] CD-3B, *Approve Site Preparation*, will be used for early site work in advance of construction.

CD-3A – Approve long-lead procurement
CD-3B – Approve site preparation

Project Cost History ($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2022	27,000	261,000	288,000	32,000	N/A	32,000	320,000
FY 2024	22,379	353,574	375,953	24,047	N/A	24,047	400,000
FY 2025	22,379	353,574	375,953	24,047	N/A	24,047	400,000

2. Project Scope and Justification

Scope
The PSC facility will be a new, Leadership in Energy and Environmental Design (LEED) Certified, modern building with co-located offices and operations.

The PSC facility will consist of approximately 135,000 gross square feet of offices, laboratories, and support areas. The size of the facility will be refined throughout the established design process.

The new PSC facility will include the following high-level capabilities:
- A 50-year operating life.
- Collocated office, general use, and specialized laboratory space in one facility.
- Operational and physical security controls for all space types.
- Lab area infrastructure to support local exhaust ventilation, grounding and static dissipative controls, and specific engineering controls for operations.
- Controls and requirements for the varying chemicals throughout the facility, which include water reactive materials, compressed gasses (inert, oxygen, inert/5% hydrogen, etc.)
- Expanded utilities and site infrastructure to enable future building addition.
- LEED certification and compliance with Climate Adaptation, Resilience and Sustainability in Project Management memorandum from The Deputy Secretary of Energy issued April 5, 2022.

CD-3A, Approve Long-Lead Procurement, will be used for laboratory and facility equipment ($17 million). This equipment has long procurement durations on the order of 18 to 24 months. The process equipment includes dryers to remove moisture from the ambient air to provide a dry, low dew point atmosphere within the facility for the safe handling of water-reactive materials during production and research. Other process equipment includes a sputter coater, an electron beam welder, a shock tower, a vibration table, and a semi-automated pellet press. CD-3B, Approve site preparation, ($6 million) will advance early site work in advance of vertical construction, and consists of grading, clearing, and grubbing, installation of drainage and erosion control for the construction area, and temporary utilities for general contractor trailers.

Justification
All modernization programs and future planned nuclear weapon systems require power source capabilities, and the NNSA has concluded there is an unacceptable risk to these capabilities due to aging and inadequate facilities and an unreliable supplier base. The full-lifecycle power sources mission for the Nuclear Security Enterprise (NSE) is carried out by Sandia National Laboratories (SNL) and this capability primarily resides in Building 894, a now 75-year-old shipping and receiving facility not designed to handle the environments necessary for the mission. The building's maintenance issues began impeding operations at an increasing rate by 2016, thus putting production capacities at significant risk. Building 894 was rated as "Poor" (Building Condition Index Score of 56) by facility and system assessments conducted in 2020. As of FY 2023, the facility had about $26 million in deferred maintenance, which is expected to grow to more than $30M in the next few years and further increases the risk to the power sources mission.

Successful completion of the power sources facility will:
- Enable the NNSA to meet power source requirements through 2080.

- Reduce risks to the programs associated with SNL Building 894, including environmental safety and health risks.
- Reduce the risk of mission dependence on an unstable vendor base.
- Ensure the availability of capabilities to complete RDT&E activities in addition to production.
- Ensure the flexibility and agility necessary to meet future mission needs.

The project is being conducted in accordance with the project management requirements in DOE O 413.3B, Program and Project Management for the Acquisition of Capital Assets. Funds requested under this data sheet may be used to provide independent assessments for planning and execution of this project, and contracted support services to the federal project team for oversight and support.

Preliminary Key Performance Parameters (KPPs)

The Threshold KPPs, represent the minimum acceptable performance that the project must achieve. Achievement of the Threshold KPPs will be a prerequisite for approval of CD-4, Project Completion. The Objective KPPs represent the desired project performance. Initial values were developed prior to CD-0 approval and were revised prior to CD-1.

#	Requirement	Threshold Value	Objective Value	Unit
M-1	Meet PRD requirements for primary batteries[a]	Various (see PRD)	Various (see PRD)	Starts and programs per year
M-2	Meet PRD requirements for thermal batteries	Various (see PRD)	Various (see PRD)	Starts and programs per year
M-3	Meet PRD requirements for RTG technology	Various (see PRD)	Various (see PRD)	Starts and programs per year

3. Financial Schedule ($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2022	13,827	13,827	0
FY 2023	0	0	6,591
FY 2024	8,552	8,552	14,500
FY 2025	0	0	1,288
Total Design	**22,379**	**22,379**	**22,379**
Construction			
FY 2022	0	0	0
FY 2023	0	0	0
FY 2024	29,334	29,334	26,000
FY 2025	50,000	50,000	50,344
FY 2026	115,000	115,000	111,423
FY 2027	130,000	130,000	123,658
FY 2028	23,713	23,713	34,869
FY 2029	0	0	1,753
Total Construction	**348,047**	**348,047**	**348,047**
TEC			
FY 2022	13,827	13,827	0

[a] Includes both starts for Joint Test Assemblies and Stockpiled Power Sources.

	Budget Authority (Appropriations)	Obligations	Costs
FY 2023	0	0	6,591
FY 2024[a]	37,886	37,886	40,500
FY 2025	50,000	50,000	51,632
FY 2026	115,000	115,000	111,423
FY 2027	130,000	130,000	123,658
FY 2028	23,713	23,713	34,869
FY 2029	0	0	1,753
Total TEC	**370,426**	**370,426**	**370,426**
Other Project Costs (OPC)			
FY 2020	3,720	3,720	790
FY 2021	4,675	4,675	5,552
FY 2022	6,398[b]	6,398[b]	4,973[c]
FY 2023	0	0	1,805
FY 2024	1,500	1,500	1,813
FY 2025	1,250	1,250	1,893
FY 2026	3,000	3,000	3,455
FY 2027	4,000	4,000	4,068
FY 2028	4,000	4,000	3,997
FY 2029	1,031	1,031	1,228
Total OPC	**29,754**	**29,754**	**29,754**
Total Project Costs (TPC)			
FY 2020	3,720	3,720	790
FY 2021	4,675	4,675	5,552
FY 2022	20,225	20,225	4,973
FY 2023	0	0	8,396
FY 2024	39,386	39,386	42,313
FY 2025	51,250	51,250	53,525
FY 2026	118,000	118,000	114,878
FY 2027	134,000	134,000	127,726
FY 2028	27,713	27,713	38,866
FY 2029	1,031	1,031	2,981
Total TPC	**400,000**	**400,000**	**400,000**

[a] FY 2024 Budget Authority assumptions are based on the FY 2024 President's Budget Request.
[b] This value was mistakenly shown as 6,352 in the FY 2022 CPDS.
[c] This value was mistakenly shown as 4,346 in the FY 2022 CPDS.

4. Details of Project Cost Estimate ($K)

		Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)				
Design				
	Design	17,305	17,305	N/A
	Federal Design Review Support	1,665	1,665	N/A
	Contingency	3,409	3,409	N/A
Total Design		**22,379**	**22,379**	**N/A**
Construction				
	Site Work	13,629	33,077	N/A
	Equipment	50,887	50,887	N/A
	Construction	220,937	219,381	N/A
	Federal Support	2,171	2,171	N/A
	Contingency	60,423	48,058	N/A
Total Construction		**348,047**	**353,574**	**N/A**
Total Estimated Cost (TEC)		**370,426**	**375,953**	**N/A**
Contingency, TEC		*63,832*	*51,467*	*N/A*
Other Project Costs (OPC)				
	Analysis of Alternatives	821	821	N/A
	Conceptual Design	9,616	9,616	N/A
	CD-1 Documents/Fed Support	1,762	1,762	N/A
	Start-up	7,400	1,400	N/A
	Equipment Move	7,381	8,060	N/A
	Contingency	2,594	2,388	N/A
Total OPC		**29,574**	**24,047**	**N/A**
Contingency, OPC		*2,594*	*2,388*	*N/A*
Total Project Cost		**400,000**	**400,000**	**N/A**
Total Contingency (TEC+OPC)		***66,426***	***53,855***	***N/A***

5. Schedule of Appropriations Requests ($K)

Request Year	Type	Prior Years	FY2023	FY 2024	FY 2025	FY2026	FY2027	FY2028	FY2029	Out Years	Total
FY 2022	TEC	13,827	TBD	TBD	TBD	TBD	TBD	N/A	N/A	274,173	288,000
	OPC	9,800	TBD	TBD	TBD	TBD	TBD	N/A	N/A	22,200	32,000
	TPC	23,627	TBD	TBD	TBD	TBD	TBD	N/A	N/A	296,373	320,000
FY 2024	TEC	13,827	0	37,886	71,083	73,902	79,824	45,136	N/A	54,295	375,953
	OPC	14,027	0	1,000	2,000	1,361	1,788	1,450	N/A	2,421	24,047
	TPC	27,854	0	38,886	73,083	75,263	81,612	46,586	N/A	56,716	400,000
FY 2025	TEC	13,827	0	37,886	50,000	115,000	130,000	23,713	0	N/A	370,426
	OPC	14,793	0	1,500	1,250	3,000	4,000	4,000	1,031	N/A	29,574
	TPC	28,620	0	39,386	51,250	118,000	134,000	27,713	1,031	N/A	400,000

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	4Q FY 2030
Expected Useful Life (number of years)	50
Expected Future Start of D&D of this capital asset (fiscal quarter)	4Q FY 2080

	Annual Cost		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate[a]
Operations and Maintenance	$0.8M	$12M	$40M	$600M

7. D&D Information

The one-for-one offset requirement will be met by utilizing site-banked square footage. A plan for D&D of the existing facility will be developed at the end of construction of the new facility when characterization data is available.

	Square Feet
New area being constructed by this project at SNL	135,000
Area of D&D in this project at SNL	0
Area at SNL to be transferred, sold, and/or D&D outside the project including area previously "banked"	135,000
Area of D&D in this project at other sites	0
Area at other sites to be transferred, sold, and/or D&D outside the project including area previously "banked"	0
Total area eliminated	135,000

8. Acquisition Approach

The preliminary and final design is being led by the SNL Management and Operating (M&O) contractor utilizing a subcontracted Architectural and Engineering firm. The M&O contractor has also awarded a subcontract for a Construction Manager at Risk (CMAR) effort to provide constructability reviews during the design review process, develop construction estimates at each design phase, and develop construction specific documents. The M&O will award a subcontract for the

[a] Not escalated; Base Year 2022.

construction of the facility and will provide oversight of construction activities. The CMAR subcontract does not guarantee receipt of the construction subcontract.

Stockpile Research, Technology, and Engineering

Overview
The Stockpile Research, Technology, and Engineering (SRT&E) program provides the knowledge and expertise needed to maintain confidence in the nuclear stockpile without additional nuclear explosive testing.

The subprograms are:
1. Assessment Science (AS)
2. Engineering and Integrated Assessments (EIA)
3. Inertial Confinement Fusion (ICF)
4. Advanced Simulation and Computing (ASC)
5. Weapon Technology and Manufacturing Maturation (WTMM)

The Stockpile Research, Technology, and Engineering (SRT&E) program:
1. Provides the foundation for science-based stockpile decisions; the capabilities, tools, and components to enable design, assessment, qualification, certification, and technology maturation; and balances the most pressing investments needed to meet Department of Defense (DoD) warhead requirements and schedules, along with the critical long-term research and development needed for a robust and responsive future stockpile.
2. Pursues Critical Decision-4 in Fiscal Year (FY) 2030 for the Advanced Sources and Detectors (ASD) Major Item of Equipment (MIE) for the Enhanced Capabilities for Subcritical Experiments (ECSE) program.
3. Deploys the Advanced Simulation and Computing (ASC) Commodity Technology System-2 (CTS-2), Crossroads and El Capitan high performance computing (HPC) systems in the classified computing environment for annual assessment, modernization programs, and safety and surety assessments in FY 2025 and across the Future-Years Nuclear Security Program (FYNSP).
4. Delivers modern technologies to enhance secure manufacturing capabilities and provide timely support of the stockpile, such as increasing Technology (TRL) and Manufacturing Readiness Levels (MRL) with reduced systems costs.

Line-Item Construction and Major Items of Equipment
SRT&E line-item construction projects and line-item purchases are critical to revitalizing the SRT&E and program-specific capabilities that directly support the nuclear weapons programs. The FY 2025 Budget Request for the U1a Complex Enhancements Project (UCEP) will construct activities and initiate startup and testing of the equipment and subsystems necessary to deploy large Major Items of Equipment (MIE) diagnostic systems and experiments. The FY 2025 Budget Request for the Advanced Sources and Detectors MIE will provide the capability to conduct weapons-scale, radiographically diagnosed subcritical experiments using special nuclear material.

50 U.S. Code 2746 requires that if the estimated cost of completing conceptual design for a construction project exceeds $5,000,000 the Secretary shall submit to Congress a request for funds for the conceptual design before submitting a request for funds for the construction project. NNSA anticipates the estimated cost to complete the conceptual design for the Los Alamos Neutron Science Center (LANSCE) Modernization Project (LAMP) construction project will be $16,000,000 to $31,000,000 and will be funded out of the Primary Assessment Technology program.

Stockpile Research, Technology, and Engineering
Funding ($K)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
Stockpile Research, Technology, and Engineering					
Assessment Science					
Primary Assessment Technologies	154,507	154,507	183,716	+29,209	+18.9%
Dynamic Materials Properties	124,366	124,366	139,982	+15,616	+12.6%
Advanced Diagnostics	31,064	31,064	31,500	+436	+1.4%
Secondary Assessment Technologies	72,104	72,104	56,581	-15,523	-21.5%
Enhanced Capabilities for Subcritical Experiments	277,225	277,225	240,298	-36,927	-13.3%
Hydrodynamic and Subcritical Experiment Execution Support	142,402	142,402	182,173	+39,771	+27.9%
24-D-513 Z-pinch Experimental Underground System (ZEUS) Test Bed Facilities Improvement (ZTBFI), NNSS	0	0	0	0	0%
17-D-640 U1a Complex Enhancements Project, NNSS	53,130	53,130	73,083	+19,953	+37.6%
Total, Assessmment Science	854,798	854,798	907,333	+52,535	+6.1%
Engineering and Integrated Assessments					
Archiving and Support	43,950	43,950	39,679	-4,271	-9.7%
Delivery Environments	37,674	37,674	38,247	+573	+1.5%
Weapons Survivability	93,303	93,303	82,002	-11,301	-12.1%
Studies and Assessments	5,000	5,000	69,000	+64,000	+1280.0%
Aging and Lifetimes	87,260	87,260	60,072	-27,188	-31.2%
Stockpile Responsiveness	63,742	63,742	70,000	+6,258	+9.8%
Advanced Certification and Qualification	58,104	58,104	59,000	+896	+1.5%
Total, Engineering and Integrated Assessments	389,033	389,033	418,000	+28,967	+7.4%
Inertial Confinement Fusion	630,000	630,000	682,830	+52,830	+8.4%
Advanced Simulation and Computing	790,000	790,000	879,500	+89,500	+11.3%
Weapon Technology and Manufacturing Maturation	286,165	286,165	286,489	+324	+0.1%
Total, Stockpile Research, Technology, and Engineering	2,949,996	2,949,996	3,174,152	+224,156	+7.6%

Stockpile Research, Technology, and Engineering
Outyear Funding ($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Stockpile Research, Technology, and Engineering				
Assessment Science				
Primary Assessment Technologies	192,570	185,211	148,975	151,094
Dynamic Materials Properties	185,743	209,563	192,515	193,655
Advanced Diagnostics	13,210	13,907	14,143	14,381
Secondary Assessment Technologies	68,273	59,917	60,473	61,034
Enhanced Capabilities for Subcritial Experiments	242,718	181,156	133,926	64,720
Hydrodynamic and Subcritical Experiment Execution Support	180,963	164,413	165,761	166,923
25-D-XXX LANSCE Modernization Project, LANL	0	0	63,830	142,866
24-D-513 Z-pinch Experimental Underground System (ZEUS) Test Bed Facilities Improvement (ZTBFI), NNSS	0	0	0	0
17-D-640 U1a Complex Enhancements Project, NNSS	64,000	50,000	0	0
Total, Assessmment Science	947,477	864,167	779,623	794,673
Engineering and Integrated Assessments				
Archiving and Support	39,739	40,791	41,144	41,449
Delivery Environments	38,320	39,130	39,400	39,661
Weapons Survivability	77,092	75,284	47,638	48,079
Studies and Assessments	69,859	74,851	74,846	75,411
Aging and Lifetimes	65,833	68,805	69,097	69,402
Stockpile Responsiveness	69,859	71,328	71,820	72,295
Advanced Certification and Qualification	59,041	60,297	60,712	61,114
27-D-XXX Combined Radiation Environments for Survivability Testing, SNL	0	50,000	115,000	181,394
Total, Engineering and Integrated Assessments	419,743	480,486	519,657	588,805
Inertial Confinement Fusion	681,906	704,857	705,226	705,470
Advanced Simulation and Computing	879,295	879,915	861,265	891,002
Weapon Technology and Manufacturing Maturation	291,379	291,707	314,866	330,958
Total, Stockpile Research, Technology, and Engineering	3,219,800	3,221,132	3,180,637	3,310,908

Stockpile Research, Technology, and Engineering
Explanation of Major Changes ($K)

	FY 2025 Request vs FY 2023 Enacted
Stockpile Research, Technology, and Engineering	
Assessment Science: The increase supports the design, assembly, and analysis of multiple subcritical experiments (SCEs), supports the highest priority acceleration opportunities for samples and experiments in support of the Pu/Pit Aging Plan and provides increased cadence of integrated weapon experiments at surrogate firing sites and vessel procurements. The increase is partially offset by reduced funding for Advanced Source and Detectors consistent with project profile.	**+52,535**
Engineering and Integrated Assessments (E&IA): The increase reflects the continuation of the Nuclear Weapons Council (NWC)-directed Phase 1, Concept Assessment, on various non-ballistic reentry vehicles (Next Generation Reentry Vehicle (NGRV)) and hard and -deeply buried targets (HDBT) by the Studies and Assessments program. The increase is partially offset by reduced funding for Combined Radiation Environments Survivability Test (CREST) facility Other Project Costs (OPCs) consistent with project rebaseline.	**+28,967**
Inertial Confinement Fusion: The increase supports National Ignition Facility (NIF) & Z facility sustainment activities. This increase is partially offset by reductions in High-Energy-Density (HED) and ignition science experimental activities and Diagnostics & Instrumentation development while preserving the necessary experiments and capabilities to deliver on the highest priority stockpile stewardship needs.	**+52,830**
Advanced Simulation and Computing (ASC): The increase reflects the transfer of the Capabilities for Nuclear Intelligence (CNI) portfolio from other SRT&E programs, the expansion of the Production Simulation Initiative, the initiation of a new Artificial Intelligence for Nuclear Deterrence (AI4ND) portfolio, and the start of facility preparation for the next Advanced Technology System (ATS) deployment at LANL.	**+89,500**
Weapon Technology and Manufacturing Maturation: The increase reflects a focus on transitioning technologies to the W93, reduced efforts in exploratory additive manufacturing techniques and an expansion of digital engineering to improve production performance.	**+324**
Total, Stockpile Research, Technology, and Engineering	**+224,156**

Stockpile Research, Technology, and Engineering
Assessment Science

Overview

The Assessment Science program provides the knowledge and expertise needed to maintain confidence in the nuclear stockpile in the absence of nuclear explosive testing. Capabilities developed and maintained in the Assessment Science program support the entire Nuclear Weapons Complex, providing: (1) the scientific underpinnings required to conduct annual assessments of weapon performance and certification of life extension programs (LEPs); (2) the scientific insight to inform our understanding of the impacts of surveillance findings to ensure that the nuclear stockpile remains safe, secure, and effective; and (3) the core technical expertise required to be responsive to technical developments and geopolitical drivers. Assessment Science also facilitates the assessment of current weapon and weapon component lifetimes, the development and qualification of modern materials and manufacturing processes, the exploration of concepts for component reuse, and the development of modern safety concepts for sustainment.

Assessment Science performs experiments to obtain the materials and nuclear data required to validate and understand the physics of nuclear weapons performance. These include hydrodynamic and subcritical experiments to obtain data on the dynamic behavior of plutonium and surrogate materials in integral geometries. Assessment Science program experiments and data analyses also facilitate safety, security, and evaluations of sustainment concepts without the need for additional nuclear explosive testing. These activities develop, exercise, and maintain the expertise and competence of the nuclear weapon design, engineering, and assessment community. This compendium of weapons-relevant data is acquired using unique, small- and large-scale experimental facilities throughout the Department of Energy (DOE) Nuclear Security Enterprise.

Many of the signature efforts enabling science-based stockpile stewardship at NNSA reside in this program. For example:

- Dynamic high- and low-Z material experiments.
- Hydrodynamic and subcritical experiments (Dual Axis Radiographic Hydrodynamic Test [DARHT], Contained Firing Facility [CFF]), Principal Underground Laboratory for Subcritical Experimentation (PULSE, formerly U1a Complex), and the proton radiography [pRad] capability at Los Alamos Neutron Science Center [LANSCE]).
- Enhanced Capabilities for Subcritical Experiments (ECSE).
- HED experiments (National Ignition Facility [NIF], Z, Omega Laser Facility [Omega]).
- Hostile environment experiments (Z, NIF).

While the research, development, platform deployment, and experimental execution support associated with these efforts reside in Assessment Science, the operational funds for the facilities are included in other program budgets, such as ICF and Infrastructure and Operations.

The Assessment Science program has strong programmatic coupling with the Advanced Simulation and Computing (ASC), Inertial Confinement Fusion (ICF), Engineering and Integrated Assessments, Weapon Technology and Manufacturing Maturation, and Stockpile Management programs. These program linkages and several crucial cross-cutting, scientific milestones (or pegposts) are captured in the Stewardship Capability Delivery Schedule (SCDS), a long-range communication, integration, and alignment tool that spans science-based stockpile stewardship activities within NNSA.

The Assessment Science program is made up of six subprograms:

1. **Primary Assessment Technologies** provides capabilities essential for annual assessment of stockpile primaries, improvement of the nuclear explosive test modeling suite in the common model framework, certification of future sustainment programs, improvements in primary safety and security, and resolution of Significant Finding Investigations (SFIs).
2. **Dynamic Materials Properties** develops and maintains the experimental capabilities needed to inform modern, physics-based models that describe and predict the behavior of weapon materials in extreme pressure, temperature, and strain rates to understand fundamental material behavior.
3. **Advanced Diagnostics** develops innovative dynamic experiment diagnostics and methodologies to provide the essential data needed to assess the current and future stockpile.

4. **Secondary Assessment Technologies** provides capabilities essential for the annual assessment of stockpile secondaries through validating weapons physics models using experimental platforms, improving models, expanding the nuclear explosive test modeling suite in the common model framework, and supporting the evaluation of new manufacturing processes, replacement materials, and aged materials in the stockpile.
5. **Enhanced Capabilities for Subcritical Experiments** establishes a key test capability and closes a capability gap to evaluate the response of plutonium to aging, modern manufacturing techniques, modern materials, and evolving design philosophies. It also enables design certification of nuclear systems without requiring nuclear testing.
6. **Hydrodynamic and Subcritical Execution Support** provides the facilities and services required to maintain a robust testing capability that supplies critical data to weapon physicists and design engineers. These data allow assessments of potential impacts on weapon performance and safety due to design changes, material substitutions, or component changes associated with LEPs, alterations (Alts), or modifications (Mods).

Assessment Science
Primary Assessment Technologies

Description

Primary Assessment Technologies (PAT) provides capabilities essential for the annual assessment of stockpile primaries, certification of future sustainment programs, improvements in primary safety and security, and resolution of significant finding investigations (SFIs). Primary assessment efforts are focused on improving stockpile stewardship science predictive ability by testing and revising the common framework models to quantify uncertainties. The main objective is to stress these predictions to better quantify performance and confidence in qualification. The predictive models will also include the impact caused by design variance issues, aging effects (time progression decay), and/or variability of manufacturing processes on primary performance. As part of the effort to characterize primary performance, subcritical experiments will incorporate these factors (variance in engineering design, aging effects, and variability in manufacturing processes) to better quantify isolated effects in focused experiments and coupled/correlated effects in integral experiments. The principal focus area of PAT is improving predictive capabilities for modeling boost, and a specific task for PAT is a preliminary examination of pit reuse options to meet requirements.

Between 2023 and 2025, PAT will be the lead for the 2025 *Advanced Understanding of Primary Performance* (SCDS) pegpost that will lead to better quantification of performance metrics and their uncertainties. This will incorporate improved boost models, plutonium aging data, and the impact of manufacturing variances.

Activities include: (1) design and analysis of hydrodynamic experiments to include subcritical experiments (SCE); (2) experiments supporting burn studies for boost science; (3) Integrated performance and analysis focused on primary's design, construction, and function; (4) nuclear science measurements (e.g., fission cross-sections, fission yield, etc.); and (5) surface science experiments to assess corrosion phenomena.

The OPCs for the Los Alamos Neutron Science Center (LANSCE) Modernization Project (LAMP) are funded under PAT and pre-Critical Decision-1 activities will occur in FY 2025.

Highlights of the FY 2025 Budget

- Support the design, assembly, and analysis of multiple SCEs to understand plutonium aging, and the impacts of modifications and changes in materials (in support of ALTs, MODs, LEPs).
- Support the development and use of platforms (Z, NIF, pRad) to enhance modeling and simulation efforts for the primary portion of the nuclear explosive package (NEP). These experiments are critical to validating our weapons physics models. The experimental validation enables increased confidence in weapon performance through reduced uncertainties.
- Complete Stewardship Capability Delivery Schedule (SCDS) Level 1 – *Advanced Understanding of Primary Performance*.
- Execute multiple plutonium (Pu) experiments at the proton radiography (pRad) facility at LANSCE. The experiments will provide critical dynamic performance data for materials and components (new alloys, new manufacturing and processing, and aging studies). Plutonium at proton radiography (Pu@pRad) will allow cost-effective and quick turn-around small, focused experiments to study HE driven plutonium for ejecta, equations-of-state (EOS), defects, and overall, early hydrodynamic behavior without driving to criticality.

FY 2026 – FY 2029 Key Milestones

- Perform an analysis of alternatives for the future of the Sandia Boost platform utilizing the knowledge gained from performing the first full containment experiment for Boost platform in FY 2025.
- Field the combined environment Majesty test series.
- Develop a multiprobe diagnostic approach to quantify ejecta mass.
- Evaluate Shallow Bubble Collapse (SBC), a new ejecta production mechanism that can occur under multiple-shock conditions based on the collapse of bubbles near the free surface of the material. This mechanism produces ejected mass that is much greater in quantity than observed in the Richtmyer-Meshkov instability (RMI) case, for several design types.
- Design proposal for a Flex shot (or series) studying SBC in integral geometries.

- Report on the measurement and evaluation of inelastic scattering for actinide and non-actinide isotopes in support of Survivability and ECSE.

FY 2023 Accomplishments

- Preparation for first experiments on the LANSCE Pu@pRad capability: documentation and peer review on the dynamic experiments that have been performed at pRad to assess the spatial resolution, timing validation, and performance of fragment mitigation materials for the first Pu series. This capability for explosively driven dynamic plutonium experiments on an intermediate scale will be an important complement to capabilities at NNSA and is on track for delivery in 2024.
- Series of SBC experiments on cerium were carried out to constrain SBC dependence on persistent melt after release. Observed transition from SBC to spall; Fastest ejecta was three times slower for spall regime. Vapor likely travels with light ejecta. Vapor measured in solid-on-release spall experiment.
- First Bosque (controlled D-T dispersion) HED experiments at the NIF.
- Successful multiprobe diagnostic experiments at the Specialized Technologies Laboratory for use in other experiments such as Pu@pRad, SCEs, and to prove out concepts.
- Installed a precision prototype neutron time-of-flight (nTOF) detector on Z.
- Developed an exploding cylinder platform that tracks the transition of an unstable interface to turbulent mix.
- Detectors & Instrumentation - Imaging System Development, KRAKEN camera systems to be used at Pu@pRad.
- Detector for Advanced Neutron Capture Experiments (DANCE) Platform at LANSCE observed neutrons from new target.
- Miramar 2 successfully executed in support of the Nimble SCE series.
- Measured Interfacial Mixing in Convergent Geometry on Z.

Primary Assessment Technologies
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Primary Assessment Technologies $154,507,000	**Primary Assessment Technologies $183,716,000**	**Primary Assessment Technologies +$29,209,000**
• Conduct proof of concept Montrose experiment and prepare samples for future experiments. • Conduct build-out of Durandal SCE device to include test hydro shots (establish confidence). • Conduct plasma transport experiments on various materials. • Evaluate and validate advanced ejecta physics models that include impact of defects, particle drag, and chemistry effects based on recent experimental results. • Deliver Final Results from Chi Nu for Major Actinides to be used by simulation and evaluation for annual assessments. • Conduct preliminary Pu@pRad experiments with intent to ensure containment and diagnostic calibrations.	• Mature the Excalibur future concepts SCE campaign evaluating material replacement and design options. • Complete Stewardship Capability Delivery Schedule (SCDS) Level 1 – *Advanced Understanding of Primary Performance*. • Execute plutonium (Pu) experiments at the proton radiography (pRad) facility at LANSCE. • Continue limited prioritized series of experiments on Boost. • Limited studies on nuclear fission product yields and very limited studies on photofission.	• Develop Durandal plutonium aging SCE campaign, to be executed in ECSE testbed, validating aging-aware models as part of the National Plutonium Aging Plan. • Advance Sherman SCE campaign, to be executed in ECSE testbed, to inform certification and assessments of ongoing modernization programs for the life of the system. • LANSCE modernization efforts - conceptual design for cost and schedule estimates. • Capabilities for Nuclear Intelligence (CNI) program funding moves to Advanced Simulation & Computing in FY 2025.

Assessment Science
Dynamic Materials Properties

Description

The Dynamic Materials Properties (DMP) subprogram develops and maintains the experimental capabilities to inform modern, physics-based models. The models describe and predict the behavior of materials undergoing extreme pressure, temperature, and strain to understand how fundamental material behavior (core DMP) affects nuclear weapon performance. The consideration of pit and secondary component reuse and replacement also requires studies of degradation of materials with age (to include aged plutonium samples) under dynamic conditions to understand potential performance changes. This subprogram provides the experimental data and assessment of Special Nuclear Material (SNM), metals, conventional/insensitive high explosives (CHE/IHE), polymers, and foams under dynamic conditions required for annual assessment and certification of the stockpile as well as for future sustainment options. Aspects of this subprogram link or coordinate with other programs/subprograms within DOE/NNSA, including Physics and Engineering Models (PEM), Aging and Lifetimes, Advanced Manufacturing Development, Plutonium Modernization, High Explosives and Energetics, DOE/Office of Science, and the Department of Defense (Joint DoD/DOE Munitions Program [JMP]). DMP provides much of the experimental results for the National Plutonium Aging Plan and 10-year integrated program plan for Plutonium and Pit Aging.

Research pursued in DMP supports (1) the annual assessment process, (2) baselining of materials properties for the future determination of aging effects (e.g., Pu aging), and (3) consideration of materials replacement and future options for sustainment programs. The characterization of new materials and processes for stockpile applications is an emerging focus for stockpile modernization and responsiveness to enable the use of modern manufacturing techniques. DMP will be supporting or leading pegpost efforts in FY 2025 and FY 2027.

The following capabilities are being developed to facilitate certification of pit reuse with insensitive high explosives (IHE) for upcoming sustainment programs: (1) heating and cooling capabilities on dynamic testing platforms, (2) high-pressure experiments on plutonium and other relevant materials, and (3) experiments on aged samples on various experimental platforms. Facilities and drivers to support experimental execution include NIF, Z, Joint Actinide Shock Physics Experimental Research (JASPER), TA-55 gas gun, High Explosives Applications Facility (HEAF), Dynamic Equations-of-State Facility (DEOS), Shock Thermodynamic Applied Research Facility (STAR), Dynamic Integrated Compression Experimental (DICE) Facility, High Pressure – Collaborative Access Team (HP-CAT), and the Dynamic Compression Sector (DCS). Additionally, for long-term certification needs, DMP is exploring alternatives that include expanding X-ray light sources (e.g., Advanced Photon Source [APS]) to characterize high Z materials, metals, and high explosives *in situ* within appropriate physical regimes. In a partnership with the Office of Science/Fusion Energy Sciences (FES), DMP is evaluating long pulse laser requirements to field a X-ray-Free Electron Laser (XFEL) to complement high-pressure materials research at the APS.

DMP activities include: (1) experimental execution (e.g., equation of state) on high Z materials (including actinides), (2) experiments of low Z materials (including polymers, foams, etc.), (3) experiments to qualify high explosives and energetics, (4) development of high pressure platforms and X-ray light sources to access and characterize materials at extreme conditions, and (5) advanced materials research that includes novel synthesis/formulation and processing methodologies leading to future manufacturing advances.

Highlights of the FY 2025 Budget

- In support of the decadal Plutonium/Pit Aging plan, prioritize properties of aged Pu and replacement materials to increase confidence in stockpile performance and LEPs.
- Emphasize tri-lab strength efforts (unifying the analytic models and multiple data sets for incorporation into simulations) in metals to provide more robust multi-phase equations of state to increase the reliability of models.
- Maintain and enhance capabilities on high-pressure platforms to expand pressure, temperature, and strain rate regimes for high-interest materials.
- Develop new molecules and methodologies for scale-up of candidate IHE to provide better performing and more efficiently produced HE.

- NNSA sectors (HPCAT and DCS) at the APS ramp up and return to normal operations after a one-year dark period while the light source is upgraded. Use X-ray light sources to develop new methodologies of examining high-interest materials (e.g., metals, HE, additively manufactured materials) under extreme conditions, leading to advanced models with reduced uncertainties.
- Collaborate across Weapons Activities in areas such as plutonium aging, pit production, and high explosives to provide weapons designers with materials options.
- Provide experimental support (of PAT) for the FY 2025 SCDS pegpost on *Advanced Understanding of Primary Performance*.

FY 2026 – FY 2029 Key Milestones

- Continue execution of experiments in support of the National Plutonium Aging Strategy.
- Develop HE material options for the future stockpile, and maturation of qualification standards, including new energetic molecules/formulations in support of the FY 2027 SCDS pegpost, *High Explosive and Energetic Material Options*.
- Complete high-Z shock ramp compression experiment at NIF up to terapascal pressure to validate and discriminate between equation of state (EOS) models.
- Execute first diffraction experiments in containment geometry on high Z metals, providing the data necessary for multiphase equations of state.
- Collaborate with Plutonium Modernization Program to identify opportunities for advancement and prioritization in the Pit Production II pegpost (FY 2029).
- Continue closing gap of Mesoscale Materials Mission (M-Cubed) in coordination with Office of Science and its labs.

FY 2023 Accomplishments

- Completed two Pu Production Science Experiments in support of SCDS pegpost to explore change in material chemistry.
- Executed DAC experiments at HPCAT to extend the pressure range of high-Z materials data and time-resolved structural information at different compression rates.
- JASPER executed experiments in support of certifications efforts and the Pu Aging program.
- Utilized the Hazardous Materials Chamber to collect high quality XRD data on shock compressed lead at the DCS.
- Performed Experiments on NIF to measure compressibility of Helium implanted lead (Pb).
- Successfully field pyrometry and spectroscopy diagnostics at JASPER to acquire temperature measurements.
- First in-situ diffraction/SAXS measurements were completed during casting of TiNb at the Advanced Photon Source in support of developing microstructure aware casting models.
- Field first calibration of rate stick experiments for developing model calibrations of new DAAF formulation, with the goal of a new DAAF based PBX.
- Published results on joint modeling and experimental analysis on lot variability of detonation performant of TATB based PBX showing possible effects due to microstructural various in new and recycled lots.
- Held a DMSS workshop that included representation from the NNSA Office of Defense Programs and DoD participants with presentations from tri-lab partners, WSU, and Argonne, leading to later milestone completion including a mission need statement.
- Executed the first Z experiment with pressed PETN to acquire data on an unreacted equation of state.

Dynamic Materials Properties
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Dynamic Materials Properties $124,366,000	**Dynamic Materials Properties $139,982,000**	**Dynamic Materials Properties +$15,616,000**
• Support operations and experiments at JASPER for the plutonium aging program and provide system availability for certification programs. • Execute experiments in support of National Plutonium Aging Plan on various platforms. • Support FY 2023 Enabling Efficient and Flexible Pit Production with a series of quasi-static experiments to assess the role of impurities on materials properties. • Perform Tiny Stripline Pu experiments with >60% increase in peak pressure as compared to those conducted in FY 2021. • Execute experiments with plutonium on NIF TARDIS platform. • Provide update on tri-lab strength effort with multiphase strength data, including strength data from NIF, TA-55, and Z. • Apply advanced diamond anvil cell capabilities to expand pressure-temperatures conditions and expand to execution on actinides. • Perform EOS measurements of advanced aged plutonium on JASPER. • Execute dynamic experiments on additively manufactured polymer lattices at 3rd generation light sources.	• Develop and qualify an expanded set of HE formulations in support of SCDS pegpost and (HE&E Material Options for the Future Stockpile, FY 2027). • High fidelity plutonium experiments on various experimental platforms in support of SCDS pegpost on Primary Performance (FY 2025). • Bring pulsed power capabilities to a light source to study material phase transitions. • Authorize new enhanced capabilities, including containment development, on Z for SNM and support initiatives from design labs. • Calibration and validation experiments on stockpile HEs and other explosives and support efforts in replacing PBX binders. • Along with other subprograms, continue execution of highest priority Pu Aging Scope required on platforms such as Z, JASPER, TA-55 40 mm gun. • Progress through the CD stages for U.S. light source investments. • Provide experimental data for qualification of new materials for the W93. • Summarize work in tailorable polymer AM materials and characterize dynamic response.	• Program support of DMPL and DMSS activities up to CD-1. • Highest priority samples and experiments in support of the Pu/Pit Aging Plan. • Supports additional scope in development of new replacement binder materials for insensitive high explosives.

Assessment Science
Advanced Diagnostics

Description

The Advanced Diagnostics (AD) subprogram develops innovative dynamic experiment diagnostics and methodologies to provide the essential data needed to assess the current and future stockpile. Requirements for stockpile data are based on recommendations from the weapons design program elements at Los Alamos National Laboratory and Lawrence Livermore National Laboratory (LANL and LLNL); by the weapons system stewardship activities, including life extension programs (LEPs); and by other subprograms in ICF and Assessment Science Programs.

Activities across the AD program include development of the highest priority diagnostics, drivers, and methodologies to support the evolving needs of the Stockpile Stewardship Program for intermediate- and long-term experiments. These emerging technologies include supporting future experiments such as new materials models, model validation, and improvements to the quality of the scientific results obtained at existing experimental facilities. Efforts to advance drivers include work in traditional pulsed power engineering, R&D for energy storage, power flow and current adder; solid state pulsed power technologies; and application of lasers to produce extreme environments.

The development and implementation of diagnostics for fundamental, focused, and integral experiments include photon, particle, and neutron detectors; position, velocity, and temperature ("shock wave") diagnostics; and soft X-ray imaging. Methodological improvements for weapons experiments include adopting novel analysis techniques for hydrodynamic and subcritical experiments. Outyear funding will support the development of the highest priority diagnostics and methodologies for fundamental, focused, and integral experiments to support the immediate needs of the Stockpile Stewardship Program.

These cutting-edge diagnostic technologies provide the technological basis to assess the stockpile using current NNSA experimental facilities. These include the Dual Axis Radiographic Hydrodynamic Test (DARHT), the flash X-ray machine (FXR) at the Contained Firing Facility, Z, Cygnus at PULSE, and the pRad at the Los Alamos Neutron Science Center (LANSCE). Outyear priorities for Advanced Diagnostics focus on marginal improvements to the quality and reliability of near-term scientific needs at existing facilities at the national security laboratories and sites.

Highlights of the FY 2025 Budget

- Development of the highest priority diagnostics and methodologies to support the immediate needs of the Stockpile Stewardship Program for fundamental, focused, and integral experiments.
- Complete design and begin procurements for a 4-pulse, 500-kV scaled injector prototype for cinematographic radiography. Delivery of this new radiography capability is delayed by 3 years. Cinematographic radiography will be a new capability that enables capturing a larger number of frames at a near-arbitrary frame rate of the time-evolution of a system under study, and in conjunction with hydrodynamic and subcritical experiments, will provide a robust test of the predictive capability of weapons design codes, reducing the need for nuclear explosive testing.
- Maintain support of dense plasma focus research and development for dynamic neutron radiography applications. Future design efforts of a dense plasma focus system for CFF are indefinitely delayed. The dynamic neutron radiography capability enables measurement of materials in hydrodynamic experiments. Dynamic neutron radiography will support the fundamental understanding of how plutonium aging and manufacturing variances affect performance, radiographic and reactivity measurements, and assurance of stockpile survivability.
- Maintain existing development efforts to mature compact pulsed power and component-level technologies. High peak pulsed power technology could be applied to multiple, future applications such as next-generation accelerator architecture for combined environments, neutron reactivity source, high flux neutron radiography source, and future programmable waveform driver to explore properties of dynamic materials such as plutonium aging.
- Advance and demonstrate modern platforms for environmental control of electrode contamination, dust, and debris for high current accelerators, and apply demonstration of these technologies on Z. If successful, this work will solve a 50-year problem that is unavoidable with certain types of accelerator systems and will provide revolutionary advances in preventing energy loss in current and future advanced driver systems.

- Research and develop next-generation diagnostics and methodologies for dynamic experiments spanning the entire spectrum from microscale physics to full hydrodynamic tests and evaluate the role that deep machine learning may play in analyzing and fusing radiographic and other data from dynamic experiments. These next-generation technologies and analytical techniques can significantly impact the development and validation of new models to predict weapons performance by exploring new regimes or conditions not accessible with current diagnostics or data analysis methods, delivering greater quantity and higher quality of data to assess the stockpile.

FY 2026 – FY 2029 Key Milestones

- Focus on incremental improvements to radiography technologies and methodologies needed for near-term hydrodynamic and subcritical experiments to inform predictive capability of weapons design codes and continue to support the moratorium on nuclear explosive testing.
- Development of the highest priority diagnostics and methodologies to support the immediate needs of the Stockpile Stewardship Program for near-term integral experiments.
- Implement existing methods and assess feasibility of incremental improvements to radiography technologies for analyzing radiographic data from dynamic experiments. These modern technologies and analytical techniques will deliver marginally improved data for stockpile assessments.

FY 2023 Accomplishments

- Commissioned two testbeds to study advanced insulator materials and flashover experiments that can inform significant performance improvements to Z and future pulse power machines.
- Completed study report on evaluation of deep machine learning as a tool for radiographic analysis which studied artificial intelligence/machine learning (AI/ML) approaches to both reconstruction and parameter estimation for a wide range of fundamental and focused experiments.
- Jointly executed double-shock experiments on a powder gun at Special Technologies Laboratory with PAT to transition the new Atomic Ejecta Source Optical Probe (AESOP) diagnostic, which characterizes the mass and size distribution of materials ejected in shock-driven experiments.
- Completed a report study of dense plasma focus as a potential driver for future flash neutron radiography capabilities.
- Achieved highest dense plasma focus neutron yield to date (1.2E12 neutrons).
- Completed a report study on enhanced radiography for Cygnus testbed which describes upgraded detector and design efforts to provide uniformity with expanded options for future experimental configurations.
- Performed simulations and experiments of structured sources of a vacuum rod-pinch (VRP) X-ray source to explore methods for improving radiographic performance of the VRP X-ray source at Cygnus.
- Improved performance of Z experiments by implementing a “debris bump” design feature which decreases the debris on the vacuum insulator stack with minimal current loss.

Advanced Diagnostics
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Advanced Diagnostics $31,064,000	**Advanced Diagnostics $31,500,000**	**Advanced Diagnostics +$436,000**
• Design and test a quarter-scale pulser prototype, an activity that supports cinematographic radiography, which could provide high fidelity data for hydrodynamic and subcritical experiments. • Continue multi-year effort to mature compact pulsed power and component-level technologies, which could be used to create nuclear weapon-like conditions for assessing the future stockpile. • Execute power flow physics and electrode conditioning experiments and continue power flow modeling and simulation work, advancing understanding in energy loss prevention in current and future systems. • Research and develop next-generation diagnostics and methodologies for fundamental, focused, and integral experiments, which can significantly impact the validation of new models by exploring new regimes not accessible with current technologies, delivering better quality and quantity of data. • Continue to improve modeling/analysis methods (such as those using machine learning), which could help reduce measurement uncertainties and ensure better quality data from experiments.	• Design, procure, and test a quarter-scale pulser prototype, an activity that supports cinematographic radiography, which could provide high fidelity data for hydrodynamic and subcritical experiments. • Continue multi-year effort to mature compact pulsed power and component-level advanced driver technologies, which could be used to create nuclear weapon-like conditions for assessing the future stockpile. Maintain minimal support for dynamic neutron radiography effort. • Execute power flow physics and electrode conditioning experiments and continue power flow modeling and simulation work, advancing understanding in energy loss prevention in current and future systems. • Research and develop next-generation diagnostics and methodologies for fundamental, focused, and integral experiments, which can significantly impact the validation of new models by exploring new regimes not accessible with current technologies, delivering better quality and quantity of data for stockpile assessments. • Continue to improve modeling/analysis methods (such as those using machine learning), which could help reduce measurement uncertainties and ensure better quality data from experiments.	• Prioritizes the development of the highest priority diagnostics and methodologies for fundamental, focused, and integral experiments to support the immediate needs of the Stockpile Stewardship Program.

Assessment Science
Secondary Assessment Technologies

Description

The Secondary Assessment Technologies (SAT) subprogram provides capabilities and advances knowledge to increase confidence in the assessment of stockpile secondaries. This enables a broad range of sustainment options and the resolution of Significant Finding Investigations (SFIs). A principal focus of SAT is to provide the experimental and science capability used to improve the quantification of full system performance margins and associated uncertainties. The subprogram uses historical nuclear explosive test data and data from a variety of above ground experiments (AGEX) to develop and validate physical models. These efforts underwrite the domain of validity for constituent models essential to our integrated simulation tools. Additionally, qualified AGEX experimental platforms can be quickly repurposed to meet the needs of life-extension and modernization programs, supporting responsiveness.

Key elements of the SAT subprogram include radiation transport, complex hydrodynamics and thermonuclear burn, material properties, and weapons outputs and effects. For stockpile systems, core SAT R&D facilitates: (1) the reacceptance of canned sub-assemblies (CSAs) and other nuclear explosive package (NEP) components for future sustainment options and (2) the development of the science basis for physics performance assessments supporting qualification of remanufactured CSAs and other components. In FY 2025, SAT will continue efforts from prior fiscal years supporting physics qualification of newly manufactured materials developed in partnership with the Secondary Capability Modernization subprogram, including the development of special material options. This year, SAT R&D will begin to evaluate and assess alternate materials of interest for future stockpile designs as well as production modernization. The SAT subprogram validates essential physics and material properties models supporting the stockpile sustainment and acquisition programs, anticipates stockpile responsiveness needs, develops new AGEX platforms, and continues model improvements, including the expansion of nuclear explosive test models in the common model framework. These efforts support the physics qualification and deliver improved appraisal of new manufacturing processes, replacement materials, and aged materials on the integrated, full-system performance of stockpile systems and are essential to the LEPs, modernization programs, and production modernization efforts. Today, understanding the impact of new manufacturing processes (e.g. additive manufacturing) for the production and restoration of CSA components requires both new experimental measurements and modeling techniques to evaluate potential performance impacts.

Efforts continue to advance and develop High-Energy-Density (HED) plasma platforms that produce radiation sources supporting weapon outputs and effects R&D. Such radiation sources serve as important capabilities for studies of material response in hostile environments. The ability to assess survivability in a hostile environment requires the integrated understanding of weapons outputs, the propagation of outputs, as well as the subsequent impact on weapons operations resulting from weapons-effects-coupling into the weapon intended for survival. SAT research includes the acquisition of experimental data for model validation improving accuracy of weapon output calculations, developing innovative laboratory radiation sources and diagnostics, and hardware qualification experiments evaluating candidate stockpile technologies for radiation hardness.

SAT has strong programmatic coupling with PAT, ASC, ICF, Engineering and Integrated Assessments, and Weapon Technology and Manufacturing Maturation. SAT has significant coupling to advanced computing platforms and resources supported by the ASC program and to the Weapons Survivability and Aging & Lifetimes subprograms in the Engineering and Integrated Assessments program. SAT partners with Secondary Capability Modernization in executing experiments and relevant analyses supporting physics and engineering qualification of new materials and processes needed for the modernization of stockpile secondaries.

Highlights of the FY 2025 Budget

- Continue design-supported physics qualification work to advance materials R&D initiatives and new manufacturing approaches, emphasizing options for the future stockpile while mitigating risk for the modernization programs. Execute initial technology maturation activities and support physics qualification for manufacturing options to mitigate aging.
- Expand the weapon science validation basis using studies of relevant nuclear explosive test data, focusing on off-nominal and non-stockpile designs, supporting stockpile responsiveness, assessments, and modernization decisions.

- Maintain core X-ray source capabilities at the HED facilities and seek partnership with Engineering and Integrated Assessments and modernization programs to perform key applied experiments needed for survivability assessments supporting qualification activities.

FY 2026 – FY 2029 Key Milestones

- Select material development and qualification on limited set of new manufacturing options aligned with advancing responsive and manufacturable stockpile in partnership with modernization efforts.
- Use the nuclear explosive test model suite of off-nominal and non-stockpile designs and apply statistical methods to specific physics relevant to secondary performance to guide the prioritization of experiments required to adequately constrain the quantification of margins and associated uncertainties for the performance of an untested secondary.
- Targeted application of HED and non-HED platforms to deliver constraining data sufficient to improve and validate constituent physics and materials models.
- Partner with Engineering and Integrated Assessments and modernization programs to deliver threat-relevant X-ray environments needed to qualify options for threat mitigation/hostile survivability.

FY 2023 Accomplishments

- Executed a broad range of experiments for model validation, material development, and fundamental physics understanding.
- Advanced HED platform design and diagnostic capabilities, fielded experiments, and analyzed data to address secondary performance physics questions, including passing final design review and entering final build and qualification stages for the time-resolved opacity spectrometer at NIF.
- Continued expanding the weapon science validation basis using studies of relevant nuclear explosive test data and off-nominal and non-stockpile designs to advance the understanding of relevant physics processes, increase confidence, and support stockpile assessment and modernization.
- Performed validation of physics modules using existing production codes to inform physics modeling capabilities in the next-generation code.
- Obtained high-quality time-resolved X-ray absorption spectra using hybrid-Complementary Metal Oxide Semiconductor (hCMOS) detectors at Z to test a hypothesis that evolving charge state balance could affect opacity measurements.
- Produced high-quality radiographs in tri-lab Z experiments measuring radiation flow in complex geometries for model validation.
- Supported Weapons Survivability/ASC experiments at Z, including advancing the ability to image the blow-off plume from samples exposed to intense X-rays, and collecting system-generated electromagnetic pulse (SGEMP) data to validate the EMPIRE code.
- With Engineering and Integrated Assessments (Advanced Certification & Qualification, Weapons Survivability), conducted Z experiments to develop capability to test larger-area samples with more realistic geometries in X-ray environments.
- Continued to collect X-ray response data of advanced materials in warm X-ray environments at Z to inform upcoming stockpile decisions.
- Continued maturation and physics qualification effort for manufacturing options developed as part of the FY 2022 SCDS *Assess Lifetimes & Mitigate Aging* pegpost. Completed a follow-up study to the FY 2021 SCDS pegpost, optimizing casting of a material of interest and investigating impact of impurities size and distribution on dynamic material behavior, to support modernization effort.
- Delivered comparison of weapon output predictions between alternate codes and alternate code modules, completing a comparison of weapon output predictions for a defined set of devices, including an assessment of prediction similarities and prediction differences guiding modeled and reported uncertainty and variation in weapon output.
- Obtained essential data from Opacity-on-NIF platform, under conditions like those previously achieved by the Opacity-on-Z platform, delivering the first rigorous comparison of opacity data between the two different platforms and to multiple opacity theory models.

Secondary Assessment Technologies
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Secondary Assessment Technologies $72,104,000	**Secondary Assessment Technologies $56,581,000**	**Secondary Assessment Technologies -$15,523,000**
• Initiate efforts to develop alternate materials and to optimize casting of material of interest and investigate impact of impurities size and distribution on dynamic material behavior to support production modernization. • Continue maturation and physics qualification effort for manufacturing options developed as part of the FY 2022 SCDS *Assess Lifetimes & Mitigate Aging* pegpost. • Continue inter-laboratory calibration effort of extinct and long-lived isotopes using historic samples. Compare measurements made between laboratories, identify sources of inconsistencies, and determine path forward. • Develop and test a methodology to provide uncertainties for radiochemical cross-sections. • Continue to advance and qualify HED platforms, to address secondary performance physics questions and anticipate needs of the modernization programs. • Complete initial comparisons of experimental and theoretical opacity data of multiple elements acquired at NIF and Z and using multiple opacity codes. Develop hypotheses for discrepancies and future directions to resolve them. • Complete a comparison of weapon output predictions between alternate codes for a defined set of devices, assess prediction similarities and differences to guide modeled and reported uncertainties in weapon output.	• Expand the weapon science validation basis using studies of relevant nuclear explosive test data, focusing on off-nominal and non-stockpile designs. • Continue to progress design-supported physics qualification, advancing key materials R&D initiatives and new manufacturing approaches. • Advance detailed diagnostic for characterizing radiation flow on the NIF. • Perform Y-88 measurements, delivering updated (n, gamma) cross-sections for use in the reaction network used by the RadChem package. • Limited incorporation of new methodology for evaluating radiochemical cross-sections into nuclear performance studies. • Address gaps in understanding identified in the FY 2023 comparisons of theoretical opacity data for multiple elements acquired at NIF and Z and develop hypotheses for discrepancies and future direction to resolve remaining gaps.	• Prioritizes studies of off-nominal and non-stockpile designs and key materials R&D initiatives supporting options for the future stockpile and studies supporting the current, aging stockpile reflecting shift of funds to higher priority work scope within NNSA. • Prioritizes existing X-ray source capabilities for survivability evaluations over X-ray source platform development.

Assessment Science
Enhanced Capabilities for Subcritical Experiments

Description

Enhanced Capabilities for Subcritical Experiments (ECSE) is a portfolio of work aimed at improving the ability to assess weapons without nuclear explosive testing. To achieve this objective, two new measurements of plutonium from subcritical experiments will provide data to help reduce uncertainties in the weapon computer models it uses to assess the stockpile. Data from ECSE is required as part of the certification of the W87-1 Modification program, as well as future Annual Assessments and LEPs.

NNSA identified two types of measurements needed when the plutonium reaches high pressure and density, during the late stages of implosion: radiographic measurements in the form of multiple, quick succession X-ray images to study how the imploding subcritical assembly changes in time; and measurements of the rate of the fission chain reaction in plutonium to study the nuclear properties of the subcritical assembly, which change as the plutonium becomes more compact . NNSA places a high priority on developing ECSE at the Nevada National Security Site's (NNSS) underground laboratory, Principal Underground Laboratory for Subcritical Experimentation (PULSE, formerly U1a Complex).

The ECSE subprogram consolidates a portfolio of work that includes (1) the Major Item of Equipment (MIE) titled Advanced Sources and Detectors (ASD), (2) a developing reactivity measurement technology named Neutron Diagnosed Subcritical Experiments (NDSE), and (3) ECSE subcritical experiment entombment activities that are completing. Managed by a Federal Project Director accountable under DOE O 413.3B to the ECSE subprogram and to a programmatically aligned Project Management Executive, the construction project 17-D-640, U1a Complex Enhancements Project (UCEP) is funded as a separate line-item. The OPCs for the UCEP are funded from the ECSE subprogram. Also managed by the ECSE subprogram while transitioning to line-item construction project management processes, the 24-D-513 Z-Pinch Experimental Underground System (Zeus) Test Bed Facilities Improvement (ZTBFI) construction project delivers the test bed that will house the underground NDSE system.

Nicknamed Scorpius, ASD is managed by a Federal Project Director under DOE O 413.3B. ASD designs and installs a large, multi-pulse accelerator system that will generate radiographs necessary to diagnose late-time dynamics in plutonium implosion experiments. ASD is scheduled to complete by the third quarter of 2030. NDSE is a measurement concept that NNSA will apply to dynamic plutonium experiments that will measure the negative reactivity of a subcritical assembly. Since neutron multiplication is sensitive to the material properties of fissile material, the data will provide a new constraint on the codes and models used to simulate the performance of nuclear weapon primaries, improving our stockpile assessment capability. Entombment activities provide a disposition area in PULSE for expended subcritical experiments.

As outlined in the *NNSA Stockpile Stewardship Management Plan*, NNSA plans long-term investments supporting plutonium science at the NNSS. NNSS is the only site in the United States with the capability to perform subcritical experiments combining high explosives and plutonium in significant quantities, a core capability for NNSA's Stockpile Stewardship Program, as per 50 U.S. Code § 2521.

Highlights of the FY 2025 Budget

- Continues delivery of ECSE capabilities in support of the W80-4, W87-1, W93, and future weapon system certification plans.
- Performs testing of the NDSE system that includes a dense plasma focus called ZEUS (Z-Pinched Experimental Underground System), associated detector system, and diagnostics prior to being moved underground to diagnose subcritical experiments in 6' diameter confinement vessels.
- Supports procurements, assembly, and testing of ASD components above ground needed prior to final installation into PULSE.

FY 2026 – FY 2029 Key Milestones

- FY 2027 – Execute subcritical experiments in the PULSE ZEUS Test Bed using NDSE.
- FY 2028 – Complete 17-D-640, U1a Complex Enhancements Project.

FY 2023 Accomplishments

- Achieved CD-2/3 for ASD.
- Started fabrication of the ASD Injector at SNL.
- Started construction of the Integrated Test Stand at NNSS.
- Fabricated and delivered 32 solid state pulsers to LLNL for lifetime testing and validation of the prototype.
- Completed drilling of the PULSE 996' borehole at NNSS.
- Poured multiple inverts (flooring) throughout PULSE at NNSS.
- Completed UCEP CD-3B.
- Initiated ZEUS Testbed Facility Infrastructure tunneling in PULSE that will house an NDSE capability at NNSS.
- Issued Functional Requirement Document and Interfaced Control Documents for ZTBFI.
- Completed the PULSE Fire Extinguishing System AoA at NNSS.
- Completed 140 successful Deuterium tests on the ZEUS machine that will be installed into the NNSS PULSE facility.
- Successfully procured, tested, and characterized the initial set of NDSE detector pixels.

Enhanced Capabilities for Subcritical Experiments
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Enhanced Capabilities for Subcritical Experiments $277,225,000	**Enhanced Capabilities for Subcritical Experiments $240,298,000**	**Enhanced Capabilities for Subcritical Experiments -$36,927,000**
• Achieved CD-2/3 for ASD. • Completed measurement of neutron yield and pulse shape using deuterium/tritium mix. • Started fabrication of the ASD Injector at SNL. • Started construction of the Integrated Test Stand at NNSS. • Fabricated and delivered 32 solid state pulsers to LLNL for lifetime testing and validation of the prototype. • Completed drilling of the PULSE 996' borehole at NNSS. • Poured multiple inverts (flooring) throughout PULSE at NNSS. • Completed UCEP CD-3B. • Initiated ZEUS Testbed Facility Infrastructure tunneling in the PULSE that will house an NDSE capability at NNSS. • Issued Functional Requirement Document and Interfaced Control Documents for ZTBFI. • Completed the PULSE Fire Extinguishing System AoA at NNSS. • Completed 140 successful Deuterium tests on the ZEUS machine that will be installed into the NNSS PULSE. • Successfully tested and characterized the initial set of NDSE detector pixels.	• Continues delivery of ECSE capabilities in support of the W80-4, W87-1, W93, and future weapon system certification plans. • Supports procurements, assembly, and testing of ASD components above ground needed prior to final installation into PULSE. • Completes construction of the Integrated Test Stand at NNSS and begin installation of the ASD injector. • Completes construction of the Scorpius Support Laboratory at NNSS. • Completes experiments at NNSS Area 11 in support of NDSE. • Begin assembly of ZEUS and detector array in the NNSS PULSE.	• Reduction is consistent with project profile for ASD. • ASD-Scorpius projected to achieve CD-4 by FY 2030 at a Total Project Cost of $1.84B.

Assessment Science
Hydrodynamic and Subcritical Experiment Execution Support

Description

The Hydrodynamic and Subcritical Experiment Execution Support (HSEES) program maintains a robust testing capability to assess the effects of component aging or defects identified during stockpile surveillance activities. The data obtained from these experiments are foundational for the annual assessment process, certification decisions, advancement of nuclear weapon science, refinement of weapon computational models, development of emergency response tools, assessment of foreign and terrorist designs, reducing the risk of technological surprise, and developing the skills and experience of weapon physicists and design engineers.

Programs determine the need for integral hydrodynamic experiments (hydros) and are responsible for the design, fabrication, and assembly of the test device as well as the post-experiment detailed data analysis that informs the physics models and weapon codes. The HSEES subprogram funds the fielding, diagnostics, execution, initial data analyses, and the disposition and cleanup of the expended hydro experiments. Once the hydro experiment is delivered to a firing site/facility, it is connected to diagnostics then detonated to obtain data. Many of the hydros are conducted in specialized, engineered steel containers (known as "vessels") that confine the high explosives and hazardous material byproducts. Following an experiment using surrogate material hydros (those experiments that do not contain Special Nuclear Material), these vessels undergo a lengthy requalification process that entails clean out, weld repair, and inspections. For plutonium experiments executed at PULSE, also known as subcritical experiments, the vessels are entombed underground and removed from inventory. These vessels require extensive engineering, and each procurement requires multiple years.

Surrogate hydros are conducted at LANL and LLNL facilities, while subcritical experiments are conducted at the NNSS PULSE. As the stockpile continues to evolve, Enhanced Capabilities for Subcritical Experiments will establish new test beds in PULSE.

Highlights of the FY 2025 Budget

- Ensures the operational and diagnostic capabilities of the NNSA complex firing facilities are sufficient to execute hydrodynamic tests in support of specific weapon systems (LEP/ALT/MOD), nuclear weapon stockpile, global security, and experimental science.
- Procures, assembles, and fields impulsively loaded steel vessels in support of integral weapon experiments/hydrodynamic tests.
- Provide experimental diagnostics and hardware to firing sites such as DARHT, CFF/FXR, PULSE, BEEF, 851, R306, and Lower Slobbovia.

FY 2026 – FY 2029 Key Milestones

- Provide operational facilities, modern diagnostics, hardware, and personnel to support experiments associated with life extension programs, weapon modification programs, weapon alteration programs, significant finding investigations, the nuclear weapon stockpile, global security, and experimental science.

FY 2023 Accomplishments

- Demonstrated major new capability at DARHT: the variable field of view (VFV) represents a powerful new set of options for designers and experimenters. VFV was utilized on two of the most complicated hydrotests ever executed at DARHT.
- Completed the final stages of vendor qualification for new production vessels; components are in fabrication.
- Weapon design laboratories executed 18 major Integrated Weapons Experiments at various firing sites.
- Fired the 5,000th shot at Cygnus in the NNSS PULSE supporting subcritical experiments.
- Procured digitizers and hardware that will be used for optical diagnostics at ZEUS Testbed in the NNSS PULSE.
- Supported Jabberworky hydrodynamic experiments at the NNSS BEEF facility.
- Updated equipment for the Pulse Power Lab, Fiber Support Lab, and Calibration Lab to prepare for long term pulsed power capability at NNSS, supporting Scorpius, ZEUS, and Cygnus.

- Executed the first Integrated Weapons Experiment with a high channel count diagnostic probe assembly at the Contained Firing Facility (CFF) informing a critical design and production decision for the Stockpile Modernization Program.

Hydrodynamic and Subcritical Experiment Execution Support
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Hydrodynamic and Subcritical Experiment Execution Support $142,402,000	**Hydrodynamic and Subcritical Experiment Execution Support $182,173,000**	**Hydrodynamic and Subcritical Experiment Execution Support +$39,771,000**
• Executed hydrodynamic tests in support of LEPs, nuclear weapon stockpile, global security, and experimental science. • Ensured the operational capabilities of the NNSA complex firing point facilities and diagnostics in support of certification, surveillance, SFIs, lifetime extensions and modernization programs, and global security. • Established contracts for procuring and assembling impulsively loaded steel vessels in support of integral weapon experiments hydrodynamic tests. • Provided experimental diagnostics and hardware to firing sites such as DARHT, CFF/FXR, PULSE, BEEF, 851, R306, and Lower Slobbovia.	• Execute hydrodynamic tests in support of LEPs, nuclear weapon stockpile, global security, and experimental science. • Ensure the operational capabilities of the NNSA complex firing point facilities and diagnostics in support of certification, surveillance, SFIs, lifetime extensions and modernization programs, and global security. • Procure, assemble, and field impulsively loaded steel vessels in support of integral weapon experiments hydrodynamic tests. • Provide experimental diagnostics and hardware to firing sites such as DARHT, CFF/FXR, PULSE, BEEF, 851, R306, and Lower Slobbovia.	• Supports increased cadence of integrated weapon experiments at surrogate firing sites such as LANL's DARHT and LLNL's CFF. • Supports increased staffing at NNSS in preparation for new underground test beds. • Supports vessel procurements that will be used for integrated weapon experiments.
17-17-D-640, U1a Complex Enhancements Projects, NNSS $53,130,000	***17-D-640, U1a Complex Enhancements Projects, NNSS $73,083,000***	***17-D-640, U1a Complex Enhancements Projects, NNSS +$19,953,000***
• Continue construction of UCEP 020. See Construction Project Data Sheet for details.	• Continue construction of UCEP 020. See Construction Project Data Sheet for details.	• Continue construction of UCEP 020. See Construction Project Data Sheet for details.

Stockpile Research, Technology, and Engineering
Engineering and Integrated Assessments

Overview

The Engineering and Integrated Assessments program is responsible for ensuring system survivability in present and future stockpile-to-target sequences (STS) and ensures a responsive nuclear deterrent through collaborative partnerships, proactive integration to include prototyping activities, and assessments. This program supports four key mission areas: (1) strengthening the science, technology, and engineering base; (2) providing tools for qualifying weapon components and certifying weapons without nuclear explosive testing; (3) supporting annual stockpile assessments through improved weapons surveillance technologies and warhead component aging assessments; and (4) providing capabilities that accelerate the nuclear weapons acquisition process.

Engineering and Integrated Assessments is composed of the following programs:

1. **Archiving and Support** preserves and maintains historic knowledge, records, and data related to U.S. nuclear weapons testing and Stockpile Stewardship, and provides targeted studies, multi-system assessments, and independent reviews that support the annual assessment of the stockpile.
2. **Delivery Environments** funds tools and technologies that help to ensure delivery systems and platforms survive current and future STSs in *Normal* and *Abnormal* environments.
3. **Weapons Survivability** funds tools and technologies to ensure U.S. weapons will operate through current and future H*ostile* environments such as current and future enemy defenses.
4. **Studies and Assessments** funds pre-Phase 1/6.1 activities to inform NWC decision-makers of the strategic impacts from the pursuit of various Nuclear Security Enterprise and weapon capabilities in coordination with USSTRATCOM and the Military Services.
5. **Aging and Lifetimes** funds scientific research to understand and mitigate the impacts of aging on materials and components in the stockpile, and develops diagnostics used to assess age-induced impacts on weapon systems.
6. **Stockpile Responsiveness** provides efforts that sustain, enhance, and exercise capabilities required to conceptualize, study, design, develop, engineer, certify, produce, and deploy nuclear weapons. These efforts do not include the actual production or deployment of a stockpile weapon system, nor do they engage in the acquisition of nuclear weapons for the U.S. stockpile.
7. **Advanced Certification and Qualification** funds tools and methods to ensure that there is a certification path for stockpile systems and new components in the absence of additional explosive nuclear testing. This is done by integrating computing, science, technology, and engineering advancements to facilitate certification of future life extensions and other warhead needs.

Engineering and Integrated Assessments
Archiving and Support

Description
The Archiving and Support program is responsible for preserving and maintaining relevant historic records, data, and knowledge related to U.S. nuclear weapons and Stockpile Stewardship and providing targeted studies, independent reviews, and multi-system assessments that support the annual assessment process.

Archiving and Support activities include:
Archiving and Data Management (ADAM) – By physically and digitally preserving historical knowledge, records, and data related to U.S. nuclear weapons and Stockpile Stewardship efforts, ADAM ensures the continuity and accessibility of this information beyond the lifetime of its native formats. Additionally, ADAM provides access to the historical archives used across the Nuclear Security Enterprise by researchers, scientists, engineers, and other requestors (e.g., the public, educational institutions). Data from the ADAM program is used to maintain and assess the current stockpile, support stockpile modernization, and train the next generation of weapons scientists and engineers.

Assessments and Targeted Studies (A/TS) – This effort concentrates on short term, one- to two-year, weapon-informed studies that target the gaps in weapons system knowledge to improve Stockpile Stewardship assessments. Key activities include multi-weapon applicable modeling and simulation methods with a focus on certification and safety processes and other physics, chemistry, and engineering assessments.

Annual Assessment Support – 50 U.S. Code § 2525 requires dual validation teams that conduct independent and cross laboratory weapon assessments. This effort supports the Independent Nuclear Weapon Assessment Process (INWAP), in accordance with the law, as well as other multi-system assessments that support the annual assessment reporting process.

Highlights of the FY 2025 Budget
The Archiving and Support program directly support NNSA's priorities to design and deliver the Nation's nuclear stockpile and leverage transformative technologies to address emerging challenges. Archiving and Support enables NNSA's mission using world-class science, technology, and engineering while adapting to a specialized workforce through advanced knowledge and records management technologies. Archiving and Support activities include, but are not limited to:

- Ensuring knowledge preservation to inform future stewardship activities, which include but are not limited to:
  - Physical preservation, digitization, and maintenance of large holdings at Los Alamos National Laboratory (LANL), Lawrence Livermore National Laboratory (LLNL), Sandia National Laboratories (SNL), Nevada National Security Site (NNSS), Kansas City National Security Campus (KCNSC), Savannah River National Laboratory (SRNL), Pantex Plant, and Y-12 National Security Complex.
  - Efforts targeted at accelerating the digitization process of all media types (e.g., paper, films, microfilm, microfiche, aperture cards, and other media) through technological advancements, machinery, and training opportunities.
  - Implementing Artificial Intelligence/Machine Learning (AI/ML) tools to ingest, index, catalog, and create metadata on weapons-related documents.
  - Developing a centralized, searchable database to increase accessibility to preserved information.
  - Maintaining the U.S. Geological Survey (USGS) Core Library and Data Center.
  - Funding the Nuclear Testing Archives at Nevada; the National Security Research Center (NSRC) at Los Alamos; Nuclear Test Heritage (NTH) project and Atmospheric Test Film archives at Livermore; the Central Technical Files and other archives at Sandia; and various archival needs at Kansas City, SRNL, Y-12, and Pantex.
- Providing assessments and data to support the Annual Assessment Report for the nuclear stockpile and enhance stockpile stewardship initiatives, which include but are not limited to:
  - Performing cross-laboratory, historical radiochemistry for data analysis to update current modeling and simulation tools.
  - Improving system(s) modeling capabilities that inform certification.
  - Executing 50 U.S.C 2525 by maintaining the Independent Nuclear Weapons Assessment program (INWAP), standing up challenge teams, and supporting Red Team evaluations.

- Maintaining and/or upgrading the capabilities that support Archiving and Support activities, including but not limited to:
  - Funding computer upgrades, software licenses, and other basic infrastructure needs.
  - Funding Artificial Intelligence/Machine Learning tools to not only increase efficiency of digital data curation, but also meet National Archives and Records Administration (NARA) metadata requirements.
  - Maintaining seismic monitoring stations that record seismic measurements of experimental explosions and subcritical experiments; provides verification monitoring data for the Comprehensive Nuclear-Test-Ban Treaty.
  - Upgrading and purchasing of specialized equipment used to digitize unique and critical archives dating back to the Manhattan Project.

FY 2026 – FY 2029 Key Milestones

- Expand the ADAM program by incorporating all NSE sites requiring digitization.
- Provide a Nuclear Security Enterprise (NSE)-wide, searchable database of archived materials.
- Establish inter-site relationships and processes to increase productivity.
- Apply advanced AI/ML to enhance digitization and search and recall capabilities.
- Fund an NSE-wide license for Titan Technologies: Compendia Data Platform, an AI/ML software integration tool for cataloguing, indexing, and generating metadata for digitized documents.
- Continue to support the Annual Assessment reporting process.
- Develop and demonstrate and understanding of weapon system concepts.
- Document the contributions and impact of each long-term activity.

FY 2023 Accomplishments

- Met and/or exceeded all programmatic milestones for the Archiving and Data Management (ADAM) digitization effort. Thousands of documents have been digitally preserved that enhance the knowledge base for current nuclear weapons activities.
- Met programmatic milestone for Independent Nuclear Weapons Assessment Process (INWAP) in accordance with 50 U.S.C. 2525.
- A cross-collaboration effort between NNSS and LLNL restored four test program-era Rossi Oscilloscopes to operational condition. The scopes replicate part of the detector recording system used for Reaction History during the test program. The restoration of these scopes enables training and side-by-side experimental comparison of historic (analog) and modern (digital) recorders, to identify a modern equivalent and/or a digital replacement tool.
- Newly developed analysis tools enable refined fireball yield assessments for historical (Dominic Series) atmospheric tests. Accurate historical yields confirm or adjust estimated yields which strengthen modern modeling simulation tools.
- The Summer 2023 joint internship with LLNL and the Atomic Testing Museum was completed. An undergraduate at UC Merced pursuing a bachelor's in chemistry, researched medical consequences due to the release of radioisotopes during testing at the museum. The student sought to connect the evolving medical science to policy changes that emanated from Washington during that era. They presented their findings at the museum.
- The DOE Office of Enterprise Assessments conducted an audit of the NSRC's United Kingdom accountable holdings. The auditor's conclusion was the program has moved forward by "leaps and bound" and his overall impression was this was "impressive." Noted was the document destruction process, which he would like to document as a best practice.
- Hundreds of Pit production-related materials from the Rocky Flats collection were catalogued and indexed for future research use.
- Hosted a joint DTRA-NNSA Records Management-Knowledge Management (RMKM) workshop in February 2023. The workshop was well-attended cross-agency, including NNSA and their affiliates, military counterparts (Air Force), and DTRIAC. It offered a chance for contractor organizations to share information and learn about records management practices across the Nuclear Security Enterprise.
- WAVES, a production engineering analysis and simulation tool, was released as an open-source software to universities. It supports engineering simulation, analysis workflows as well as best practices in version control, documentation, automation, regression testing, and data archiving. The software had been downloaded almost two thousand times. It has the potential to improve hiring for students who have used the tool in their university work.
- LANL and LLNL radiochemists conducted a cross laboratory comparison using several different radionuclides. Overall, the two labs' results were very consistent. The inconsistencies highlighted areas of improvement in standardization and

communication. The techniques developed in this targeted study were used by LANL radiochemists to obtain data for experiments in the Weapon Survivability Program.

Archiving and Support
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Archiving and Support $43,950,000	**Archiving and Support $36,679,000**	**Archiving and Support -$4,271,000**
• Support Cycle Annual Assessment activities and complete INWAP activities. • Conduct targeted multi-system studies and assessments identified during the Cycle 28 Annual Assessment process. • Perform stockpile studies that improve physical models for assessments and modeling methodology. • Support development of physics baseline common model framework. • Support the Nuclear Testing Archives and the National Security Research Center (NSRC). • Support Capabilities for Nuclear Intelligence Practicum. • Perform digitization of paper, film, microfiche, microfilm, aperture cards, and other media. • Continue analysis of archival test cores to support LEPs and Annual Assessment. • Invest in machine learning for metadata collection. • Support digitization, storage, indexing, and librarian services relative to nuclear security materials. • Maintain electronic repositories for existing and new digitized nuclear security materials. • Capture legacy test data in GRANTA. • Maintain PDM Link and Abacus licensing to support multi-system assessment work and the archives. • Support the U.S. Geological Survey and Federal Facility Agreement & Consent Order (FFACO). • Analyze archival test cores to generate new data to address question of life extension programs (LEPs).	• Support Annual Assessment Reporting Process and INWAP activities in accordance with 50 USC 2525. • Perform stockpile studies that improve physical models for assessments and modeling methodology. • Maintain computer licensing and equipment upgrades; purchase equipment to support work acceleration. • Continue to enhance radiochemistry capabilities that inform modern modeling tools. Support the weapons data archives, libraries, and repositories related to the nuclear security data. • Perform digitization of all media related to historical weapons related data. • Support acceleration efforts to increase digitization speed and efficiency, including updating/providing infrastructure and providing industry standard tools. • Improve digital curation methods using AI/ML technologies to meet minimum electronic records management recommendations from NARA. • Develop a comprehensive, end-to-end knowledge management program. • Support the U.S. Geological Survey in maintaining compliance with Federal Facility Agreement & Consent Order (FFACO).	• Capabilities for Nuclear Intelligence (CNI) program funding at SNL moved to Advanced Simulation & Computing in FY 2025.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted

- Support the neurodiversity programs and internships.

Description
The Delivery Environments (DE) Program helps ensure delivery systems and platforms survive current and future STSs in *Normal* and *Abnormal* environments. Select environmental examples include reentry environments, atmospheric gliding, evolving thermal and pressure differentials for prolonged periods of time, shock phenomena, and combined environments. The Delivery Environments Program accomplishes these goals by predicting, identifying, and evaluating delivery platform system and sub-system performance and responses to such environmental phenomena. The program develops engineering representative prototypes; and conducts modeling and simulating responses to new environmental demands and requirements, advanced diagnostics, and strategic and informed experiments. The Delivery Environments Program furthers its objectives by collaborating with various interagency and interoffice partners to ensure alignment.

Delivery Environments activities include:
Mission Flight – The Delivery Environments Program is forward-looking in evaluating emerging deterrence risks and works closely with the Department of Defense (DoD) in ensuring delivery systems meet the DoD's performance requirements for current, emerging, and future Stockpile-to-Target Sequences. Select environmental responses that impact survivability and failure margins include the modeling and testing of shock, vibration, thermal stresses, pressure strains, adverse and normal effects, the combination of these environments with hostile or abnormal environments, and the effects of these phenomena on nuclear and non-nuclear weapon components and systems. The Delivery Environments Program also works closely with the Weapons Survivability (WS) Program, the Stockpile Responsiveness Program (SRP), Advanced Certification and Qualification (ACQ), the Office of Advanced Simulation and Computing (ASC), the DoD, and the Intelligence Community to ensure informed decisions, prioritization, and resource optimization.

Abnormal Environments – The Delivery Environments Program ensures the survivability and effectiveness of a weapon system in abnormal environments, such as external electromagnetic events, drops, and impacts during the handling and mounting of a weapon, crash and burn scenarios, aircraft crashes, age-related malfunctions, and transportation accidents. This program collaborates with the Aging and Lifetimes Program and ASC to ensure experiments and predictive capabilities are properly developed to adequately replicate such incidents.

Current and Future Stockpile Components – In addition to considering emerging and future systems, the Delivery Environments Program also supports select computational analysis, engineering, and experiments for current stockpile applications that are relevant to emerging and future Stockpile to Target Sequences. These activities help identify relevant impacts to future Stockpile-to-Target Sequences and related survivability requirements.

Highlights of the FY 2025 Budget
- Complete intermediate-level combined environment shaker tables and hydraulic load frames, ensure proper completion of the Horizontal Air Bearing, and begin subsequent experiments on the Centrifuge Test Facility. Evaluate the performance of the upgraded tunable separation shock tower and potentially expand its applicability. Evaluate multi-axis vibration testing with higher fidelity test articles and expand collaborations with SNL on testing capabilities and related software. Continue exercising flight test diagnostics in environments, integrating sensors with LANL FlexDAQ data acquisition system, and quantifying uncertainties of integrated sensors in environments.
- Exercise Testbeds to Reduce Uncertainties in Simulations and Tests (TRUST) on advanced testbeds to quantify uncertainties in computational and experimental capabilities of interest. Mature an NEP-representative multi-feature TRUST design to expand on uncertainty quantification efforts.
- Mature existing integrated computational toolsets for predicting weapon system flight characteristics and ensure warhead performance in emerging and future delivery environments. Verification and validation efforts build confidence in the predictive capability of the toolset. This work directly supports the SCDS FY 2026 *Combined Threat Environments Simulation* Pegpost.
- Perform hydrodynamic system modeling and simulation, engineering design, focused small-scale experiments, test diagnostics, and a full-scale test. Modeling and simulation capabilities are being exercised through inter-agency

collaborations to provide a bounding trade space for advanced future systems. Develop advanced combined-environment testing techniques to assess system performance before, during, and after combined normal-hostile encounters (involves extensive model-based test design to quantify combined effects). Deploy novel diagnostics in combined environment tests. Formalize the environmental specification process for advanced ground-based testing techniques.

- Compare aero environments in advanced geometries and acquire data that will support the development of engineering modeling and simulation of emerging and future flight systems. Quantify gas chemistry and material chemistry effects on unsteady aero loading relevant to hypersonic environments. Develop optical instrumentation to support these loading characterizations and collaborate with ASC activities in data-driven modeling of hypersonic flows.
- Develop capabilities necessary to quantify multi-disciplinary failure margins for weapon systems and components in normal, abnormal, and combined normal-hostile environments. These projects will support experimental capability development for combined physics testing as well as diagnostic development and environment characterization. Collaborate with ASC to develop agile predictive capability required to design and qualify weapon systems to combined thermal and mechanical conditions.

FY 2026 – FY 2029 Key Milestones

- Deliver the SCDS FY 2026 *Combined Threat Environments Simulation* Pegpost in partnership with the Weapons Survivability Program and ASC, incorporating predictive and experimental capabilities across delivery and hostile environments.
- Continue the Program's 10 Year Strategic Plan that forecasts and advances the development and systematic progression for systems through current-intermediate-future delivery platforms and environments.
- Support preparedness exercises by developing advanced modeling, simulation, and experimental capabilities to enable combined environment evaluation of components, sub-systems, and systems in future STS environments.
- Advance evaluation of computational and experimental capabilities relative to current and future environments, thus enabling the mapping of future failure modes and quantifying margins and uncertainties in said environments.
- Mature emerging and future threat-informed capabilities to conduct multidisciplinary design optimization of future systems. This will help assess the accuracy, uncertainty, and margin of the design capability by utilizing performance parameters.
- Predict combined aero and vibration flight environments experiments, replicate combined mechanical environments on ground tests, and provide data to validate high-enthalpy and aero-chemistry models used in flight environments.

FY 2023 Accomplishments

- Collaborated with the SRP on the Sled Test Analysis and Engineering Design at Full Scale. Procured sled test article hardware for the full-scale sled test and finalized diagnostics integration with Holloman High Speed Test Track (HHSTT). Executed initial test at HHSTT in August 2023 to evaluate sled and track performance.
- In collaboration with partners from Advanced Simulation and Computing, successfully developed and advanced computational and experimental capabilities critical to developing, engineering, and qualifying nuclear weapons on future delivery systems to achieve the FY 2023 SCDS pegpost *Survivability for Re-Entry Environments*. The modeling, simulation, experimental, and diagnostic capabilities developed across the tri-lab for this pegpost will enable an agile and accelerated design cycle in response to a rapidly changing threat landscape.
- Developed pre- and post-processing support for thermal reduced order model within Sora (LLNL Flight Simulation Code). Demonstrated the insensitivity to thermal environments in future-system problems of interest.
- Completed the first wind tunnel test of the hypersonic finned cone via the Hypersonic Wind Tunnel (HWT). Analyzed the unsteady loading data on this advanced geometry to characterize the resulting fluid structure interaction.
- Leveraged an ASC Validation & Verification project work on Multiple Input, Multiple Output powered flight specification derivation methods. Developed necessary elements to perform a multi-axis powered flight vibration test. Completed plans for FY 2023 efforts toward evaluating displacement and shock / vibration sensors and met with the Joint Technology Demonstrator (JTD) team to discuss opportunities for instrumentation.

Delivery Environments
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Delivery Environments $37,674,000	**Delivery Environments $38,247,000**	**Delivery Environments +$573,000**
• Deliver the FY 2023 *Survivability for Reentry Environments* Pegpost under the Stockpile Capability Delivery Schedule (SCDS). • Conduct the first sled-test experiment – "DEEPCORE" – at Holloman Air Force Base, in partnership with the Stockpile Responsiveness Program (SRP) and the Air Force. The effort is supported by LLNL and SNL. • Conduct joint studies with the Air Force Research Laboratory and the Air Force Nuclear Weapons Center on reentry survivability predictive capabilities for advanced applications. • Begin coordinating the SCDS FY 2026 *Combined Threat Environments Simulation* Pegpost in partnership with the Weapons Survivability Program.	• Complete intermediate-level combined environment, multi-axis experiments using shaker tables and hydraulic load frames, complete the Horizontal Air Bearing tests, and begin subsequent experiments on the Centrifuge Test Facility. • Exercise TRUST on advanced testbeds to quantify uncertainties in computational and experimental capabilities. • Advance NEP-representative multi-feature TRUST design to broaden uncertainty quantification. • Perform hydrodynamic system modeling and simulation, engineering design, focused small-scale experiments, test diagnostics, and a full-scale test. • Develop advanced combined-environment testing techniques to assess system performance before, during, and after combined normal-hostile encounters. • Compare aero environments in advanced geometries and acquire data that will support the development of engineering modeling and simulation of emerging and future flight systems. • Develop capabilities necessary to quantify multi-disciplinary failure margins for weapon systems and components in normal, abnormal, and combined normal-hostile environments.	• Maintains a steady level of financial support across the laboratories and prevent disruptions as external programmatic demands arise.

Engineering and Integrated Assessments
Weapons Survivability

Description
Weapons Survivability provides the tools and technologies necessary for ensuring U.S. nuclear weapons survivability in hostile and fratricide environments. Since weapons entering the stockpile are expected to be fielded for decades, Weapons Survivability includes projections for the evolution of defensive technologies and threats.

Weapons Survivability scope includes: (1) developing scientific and engineering models for understanding radiation effects; (2) improving laboratory radiation sources and diagnostics to support code validation and hardware qualification experiments; (3) generating experimental data to validate scientific and engineering models; (4) understanding radiation-hardened design strategies; and (5) evaluating candidate and evolving stockpile technologies for radiation hardness capabilities in a generalized, weapon-relevant configuration.

Weapons Survivability activities include:
System-Generated Electro-Magnetic Pulse (SGEMP) and Electro-Magnetic Pulse (EMP) Effects – Several electromagnetic (EM) effects driven by X-rays, gamma, and high-power EM sources can induce detrimental responses to nuclear and non-nuclear electrical components of the warhead. A particular effect of concern is System Generated Electromagnetic Pulse (SGEMP), whereby photons with sufficient energy to penetrate and interact with materials inside the weapon produce energetic electrons generating large currents within the weapon. Cable SGEMP and Box Internal Electromagnetic Pulse (IEMP) are variations associated with cables and components. Understanding SGEMP (and its various counterparts, i.e., xEMP) requires knowledge of physical phenomena, including radiation transport across complex material interfaces; photo emission; radiation-induced conductivity in solids, foams, and gases; time-dependent dielectric breakdown phenomena; and EM coupling through plasmas. Importantly, the responses are highly dependent on the temporal and spectral content of the radiation drive, the properties of the materials undergoing irradiation, and the coupling between subsystems.

Related to this is the production of EMP environments driven in the atmosphere whereby X-rays and high energy gamma rays dissociate the atmosphere, produce conductivity, which drives currents and high frequency electromagnetic pulses. These environments can induce detrimental responses inside the weapon, depending on Reentry Vehicle/Reentry Body shielding effectiveness.

Presently, there are limited high-fidelity experimental and test environments for driving relevant SGEMP/xEMP responses. Current and planned capabilities utilizing the Saturn and High Energy Radiation Megavolt Electron Source III (HERMES III) Accelerators, the National Ignition Facility (NIF), and Z cannot adequately support component, subsystem, or system-level testing for many of the xEMP effects, particularly those driven by X-rays. In the absence of suitable testing capabilities (e.g., adequate fluence, spectrum, volume, time history, etc.), this effort has a strong focus on developing experimental platforms for physics discovery and code validation to support computational capabilities that enable the qualification of components for X-ray driven EM effects while advancing present phenomena understanding for future applications. In addition, this effort develops the platforms and diagnostics for test and evaluation that allows creation of relevant high fidelity (real or surrogate) environments.

Effects of X-rays and Air Blast on Materials – This effort includes all activities related to material and structural responses driven by X-rays and air blast. The effort is relevant to the study of both exo-atmospheric nuclear burst encounters, as well as endo-atmospheric encounters. Structural effects and response from exposure to air blast can become significant for the terminal phase of flight. Limited high-fidelity testing capabilities exist for analyzing and assessing these effects; for example, radiation testing is limited to small objects over a restricted range of photon energy. Mechanical surrogates are used in many cases for system- level qualification for both cold X-rays and air blast. Hence, validated modeling and simulation capabilities are vital to understanding these effects and validating the efficacy of the surrogate platforms. Select activities include direct testing of materials and components at radiation generating facilities, development of diagnostics and platforms to increase the applicability of these facilities, development of surrogate testing capabilities (e.g., explosive drives, intense particle beams or optical [intense laser] light), and development and validation of modeling and simulation

capabilities based on modern codes. Key facilities of use include the Z, NIF, Light Initiated High Explosive Facility, and related gas-gun capabilities.

Neutron Effects – Neutron radiation from nearby nuclear bursts has the potential to cause damage to various warhead components. For endo-atmospheric engagements, neutrons can be effective at ranges that are large relative to the effective ranges of other radiation. Assessing the effects of neutron exposure to warhead components requires understanding these interactions over a significant range of energies and pulse shapes. Importantly, exo-atmospheric engagements require knowledge of high energy (14 mega-electron volts [MeV]) neutron effects.

This effort includes direct testing of materials and components along with developing corresponding modeling and simulation tools. Specific activities include: modeling and experiments to investigate fission heating, modeling to quantify the initiation response to external neutron fields, experiments and modeling to investigate displacement damage in semiconductors and other electronic effects, obtaining calibration data for neutron radiation aware micro-electronics models, facility and diagnostic development, material aging effects on neutron environment survivability development, and validation of modeling and simulation capability based on modern codes. Key facilities of use include Annular Core Research Reactor facility (ACRR) and NIF.

High Energy Photon Effects – This effort primarily focuses on the study of energy (dose) and power (dose rate) deposition in material of high energy (i.e., > 1 MeV) photons. High energy photons can penetrate deep into the interior of a weapon and cause disruptions, error readouts, and burnout of critical electronics. This effort encompasses electrical component response to dose-rate effects; single electron effects, high energy photon transport in materials, radiation hardened micro-electronics design, and the study of long lifetime intrinsic radiation (INRAD) effects found within the warhead. The INRAD activity is primarily focused on the development of capability to characterize the INRAD environment and assess aging of critical components exposed to INRAD.

Weapon Output – A robust survivability capability relies upon the understanding and analyses of foreign weapon threats and their outputs. Until recently, legacy tools that were validated using underground explosive test data were exclusively used. These legacy tools are reaching the end of their lives, so this effort supports the process for modernizing and improving tools and methodologies. Improved physics fidelity and hydrodynamics over longer simulation times is a cornerstone of this development. Validation of these new tools is necessary and will be accomplished using a combination of underground test data and above ground experiments. This is coupled with higher-fidelity diagnostics to enhance the calculated uncertainties associated with weapon output modeling.

Further, the propagation and quantification of uncertainties is paramount to understanding margins and providing certification assurances for survivability analysis. A robust understanding of survivability margins cannot be achieved without uncertainty quantification imbedded within the hostile threat characterization. This effort focuses on establishing a more comprehensive understanding of the required modeling fidelity based on understanding of weapon output uncertainty propagation in the mechanical and electrical response of components and systems, more transparent and functional databases, and improved visualization software.

Combined Environments – Legacy survivability analyses have generally been performed by separating and addressing individual effects, one at a time. As computational tools, diagnostics, and technology insertion have become more flexible and robust, assessments of combined environments are now possible. This effort focuses on the development of experimental facilities, including conceptual design for CREST, and platforms for combined environment testing (e.g., radiation + mechanical, radiation + EMP, etc.), combined effects response discovery and analysis, and analysis of effects at high levels of integration. It also supports the development and validation of modeling and simulation capabilities based on modern codes. Further, data generated with combined survivability assessments can be utilized to improve understanding of integrated weapon response, electrical response, and terminal flight dynamics of U.S. warheads after a hostile or fratricide engagement.

Highlights of the FY 2025 Budget

- Execute a planned 160 research and development and qualification capability development shots on high energy density (NIF and Z) and radiation environment (e.g., Saturn, Hermes, ACRR) machines and facilities.
- Develop laboratory weapon qualification platforms that reproduce and simulate the hostile environments and effects.
- Further improve experimental capabilities for delivery systems that enable development of mitigation mechanisms capable of addressing current and future hostile threats.
- Provide experimental tools and simulation capabilities for systems to qualify the behavior of electronics in radiation and combined environments.
- Continue efforts in CREST to address the programmatic and enterprise impacts from the aging ACRR facility and requirements for a reactor-based weapons survivability capability. Execute conceptual design activities for CREST, including efforts to refine cost estimates, complete project definition, development of architectural drawings, electrical and power distribution system layout, and design basis activities (e.g., operations, maintenance, security, and radiation protection requirements).

FY 2026 – FY 2029 Key Milestones

- Maintain and extend nuclear environment test capabilities at the Hermes, Saturn, ACRR, and the NIF facilities.
- Achieve CREST CD-1.
- Deliver modeling, simulation, and testing capabilities to support qualification of new components designed to mitigate modern and future hostile environments.
- Continue to collaborate with Delivery Environments and Advanced Simulation and Computing programs on the SCDS FY 2026 *Combined Threat Environments Simulation* pegpost.

FY 2023 Accomplishments

- Completed the FY 2023 Hostile Mitigation pegpost that emphasizes the capabilities and concepts required to understand system response to future threats and to mitigate those responses, in particular thermomechanical effects of X-rays, air blast environments and effects, and RF environments and effects.
- Completed the updated draft Warhead Hostile Environment Survivability Plan (WHESP).
- Continued investigation into past testing air blast studies to compare results to current models, aiming to correctly simulate the arrival time of the blast wave on a test object.
- Established new capabilities to simulate re-entry vehicles (RVs) interacting with blast shock including a high-speed RV traveling through a large atmospheric blast.
- Completed an electron beam capability development shot series demonstrating that a newly designed source can be an effective tool for evaluating thermomechanical and thermostructural response in materials.
- Completed test and modeling campaign to assess the dose rate responses of Hetero Junction Bipolar Transistors (HBTs) in integrated circuits to better understand how radiation exposure effects HBTs across multiple bias states which may lead to more flexibility in test and qualification strategies, better utilization of test facilities, and increased understanding of combined radiation environment effects in transistors.
- Continued work on a Bayesian analysis approach to evaluate blast wave velocity along a re-entry vehicle to predict the time of arrival equation parameters and expand to predict incident angle.
- Delivered survivability evidence in support of the W93 advancement to Phase 2.
- Successfully conducted the first commissioning shot for the National Ignition Facility (NIF) Direct Laser Impulse (DLI) capability. NIF DLI is a collaborative capability development project sponsored by the UK, DTRA, and USDOE.
- Successfully fielded an experiment for model validation in-core at the White Sands Missile Range (WSMR) Fast Burst Reactor (FBR), a first-of-its-kind operation for many personnel at the facility and laboratory.
- Completed experiments on Z Machine to measure thermomechanical shocks (TMS) in materials after exposure to warm X-rays including first dedicated use of a novel greater than 8 keV photon-energy source for a radiation effects science experiment, enabling significantly higher X-ray fluence on materials under test.
- Conducted conceptual design activities in support of CREST.

Weapons Survivability
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Weapons Survivability $93,303,000	**Weapons Survivability $82,002,000**	**Weapons Survivability -$11,301,000**
• Continue development and expansion of diagnostics for environment characterization and response data. • Complete the SCDS FY 2023 *Hostile Mitigation* pegpost. • Continue support of conceptual design activities for the CREST facility. • Establish broader use of uncertainty quantification across hostile engagement applications. • Continue experimental source development for enhanced hostile environments. • Improve ability to field flexible test and experiment platforms for combined environments testing for device level physics research. • Further high explosive blast analysis capability development, experiment design, diagnostic development.	• Continue conceptual design activities for the CREST facility. • Support activities for the FY26 *Combined Environments* SCDS pegpost. • Conduct diagnostic enhancement and source platform definition of Saturn facility in support of ongoing Saturn recapitalization effort. • Develop mod/sim and experimental platforms for combined environments effects studies on electronic response, including neutron and gamma: EMP and gamma; and EM and vibration. • Conduct experiments and mod/sim analysis of cavity, box, and cable SGEMP environments. • Execute experiments, characterization, diagnostics, and platform development for neutron environments to support W87-1 qualification efforts. • Conduct experiments at ACRR and TREAT to support validation of mod/sim capability for neutron effects.	• Decrease is consistent with Combined Radiation Environments Survivability Test (CREST) project OPC requirements.

Engineering and Integrated Assessments
Studies and Assessments

Description

The Studies and Assessments Program, established by Congress in FY 2020, improves oversight and visibility of pre-Phase X / 6.X assessments. Beginning in FY 2023, this program improves the ability of the Office of Defense Programs to respond to Nuclear Weapons Council (NWC) direction for joint studies of potential weapon and Nuclear Security Enterprise (NSE) capabilities. These studies result in concept assessments to inform NWC decisions about the future nuclear weapon stockpile and supporting enterprise. The Studies and Assessments program collaborates with other Engineering and Integrated Assessments and Weapon Technology and Manufacturing Maturation programs to align their scope with these future capability needs, as well as with other NNSA programs to coordinate impacts from these studies. Additionally, Studies and Assessments develops innovative business practices to improve NSE collaboration and agility.

Highlights of the FY 2025 Budget

- Complete either the second of the two-year Phase 1 (Concept Assessment) of the Non-Ballistic Reentry Vehicle program or the second year of the multi-year Phase 1 (Concept Assessment) of the Hard and Deeply Buried Targets defeat, per NWC strategic direction.
- Start either the multi-year Phase 1 (Concept Assessment) of the Hard and Deeply Buried Targets defeat or the two-year Phase 1 (Concept Assessment) of the Non-Ballistic Reentry Vehicle program, per NWC strategic direction.
- Explore NNSA weapon design options and potential stockpile-to-target sequence (STS) environments for a Future Strategic Warhead (FSW), per NWC strategic direction.
- Net Assessments supports an all-source, broad-view, data-driven analytic determination of standing, trends, and future needs for the NNSA.

FY 2026 – FY 2029 Key Milestones

- Maintain early weapon design option studies and STS environment analyses to identify research and development activities for the FSW, per NWC strategic direction.
- In coordination with USSTRATCOM and the Military Services, conduct concept assessments to inform NWC decision-makers of the strategic impacts from the pursuit of various Nuclear Security Enterprise and weapon capabilities.
- Pursue Future Land-based Strategic Warheads (FLSW) studies, per NWC strategic direction.
- Complete the multi-year of the Hard and Deeply Buried Phase 1 study, per NWC strategic decision.

FY 2023 Accomplishments

- Completed Next Generation Reentry Vehicle (NGRV) Year 2 technical study that supports U.S. Air Force Advanced Concepts Study.
- Completed NGRV 60 Day Feasibility Study as requested by the U.S. Air Force to determine the feasibility of incorporating W87-1 warhead design features and components into a new Reentry Vehicle (RV) warhead design.

Studies and Assessments
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Studies and Assessments $5,000,000	**Studies and Assessments $69,000,000**	**Studies and Assessments +$64,000,000**
• Explore NNSA weapon design options and potential stockpile-to-target sequence (STS) environments in support of the U.S. Air Force Advanced Concepts study, which examines future aeroshell concepts for the LGM-35A Sentinel, also known as the Ground-Based Strategic Deterrent. • Determine the feasibility of inserting technology and/or manufacturing processes into the stockpile and perform benefit and risk analyses. • Develop and deploy innovative business practices, communication tools, and collaboration models to improve NSE agility.	• Maintain exploration of NNSA weapon design options and potential stockpile-to-target sequence (STS) environments for a Future Strategic Warhead (FSW), per NWC strategic direction. • Complete the second year of the two-year Phase 1 (Concept Assessment) of the Non-Ballistic Reentry Vehicle program, per NWC strategic direction. • Continue the multi-year Phase 1 (Concept Assessment) study on Hard and Deeply Buried Target defeat, per NWC strategic direction. • Perform tri-lab (LANL, LLNL, and SNL) Net Assessments.	• Reflects additional program requirements including the multi-year Non-Ballistic Reentry Vehicle Phase 1 study, the Hard and Deeply Buried Target (HDBT) defeat Phase 1, and Net Assessments.

Engineering and Integrated Assessments
Aging and Lifetimes

Description
Aging and Lifetimes detects and predicts the onset of harmful material compatibility and aging phenomena in nuclear weapon materials, components, and subsystems before they degrade the nuclear deterrent. Aging and Lifetimes also ensures new materials introduced into the stockpile, whether through life extension programs, modifications, or alterations, will not cause aging problems in the future. These activities require a deep understanding of the material, chemical, metallurgical, physical, and engineering behaviors that control the performance, aging, and degradation of various components in the weapon systems.

To achieve its programmatic goals, Aging and Lifetimes conducts three types of key activities:
- Aging Studies, which provide fundamental materials aging knowledge, inform decisions on when to replace weapons components and materials, whether materials can be reused, or if new materials could cause aging issues.
- Computational Modeling, which predicts the aging rates, mechanisms, and impacts for weapon components and materials and provides component and materials lifetime estimates.
- Diagnostic Tool Development, which develops and provides diagnostic tools for improving the quantity and quality of surveillance data for the enduring and future stockpiles.

Aging and Lifetimes activities include:
Non-Nuclear Components – This activity addresses aging related phenomena of non-nuclear components and identifies the highest-risk aging concerns that cross-cut multiple weapon systems. These components perform a wide variety of essential functions and ensure that the nuclear weapon always performs as intended.

High Explosives (HE) in the Nuclear Explosives Package – This activity determines when age-related changes in main charges and boosters may affect weapon safety, performance, and/or reliability. This is accomplished through a combination of predictive modeling, experimental techniques, non-destructive evaluation tools, and assessment of surveillance data.

Pits – This activity develops and delivers new analytical methods, tools, modeling, and diagnostics, including non-destructive evaluation techniques, to achieve timely, less invasive, and more cost-effective component surveillance.

Canned Subassemblies (CSAs) and Cases – This activity provides experimentally validated material aging models and integrated materials chemistry simulations needed to determine when, or if, CSAs or cases will need to be refurbished or replaced.

Non-Nuclear Materials – This activity develops and applies predictive models for assessing the aging of non-nuclear materials. Additional activities include developing diagnostics for testing of non-nuclear materials, assessing new methods and materials to replace legacy formulations, evaluating compatibility of candidate materials with other stockpile materials, and developing predictive lifetime models for polymeric or other materials and components.

Systems – This activity augments the existing surveillance program with system-level evaluation tools that include new capabilities to measure component-level parameters during system testing and provide improved confidence in future weapons reliability, safety, and performance.

Highlights of the FY 2025 Budget
- Continue development and maturation of advanced non-destructive diagnostics for transition to core surveillance based on recommendations from the Component Evaluation Program Planning Committees and Jason studies.
- Continued development of the Shell Acceleration Initiation Train (SAIT) test intended to replace the existing Snowball test used for high explosives.
- Support material compatibility and aging assessments required to mature W93 component technologies.
- Study aging behaviors of potential candidate stockpile materials to support future decisions.

- Support and evaluate newly developed accelerated aging testing methodologies designed to rapidly and more accurately determine responses of individual materials to anticipated environmental stressors.
- Analyze chemical, physical, and mechanical properties of organic polymers.
- Compare predictive aging models to legacy data sets.
- Develop and extend the Reaction-Sorption Transport and Mechanics (ReSorT-M) workflow to predict outgassing, sorption, transport, and chemical reactions of vapors, solvents, and gases in a complex multi-material ensemble.
- Develop and mature hydrogen sink models to be applied in Diffusion ReACtiOn (DRACO) Canned Sub-Assembly aging models.
- Continue improvement in scientific understanding of corrosion and coatings as a function of temperature and gas composition.
- Research how digital twin platforms can link production data with aging data – from both current and next generation diagnostics and sensors – to predict lifetimes of individual weapon components and systems (FY 2026 SCDS *Modern Surveillance Methods* pegpost).

FY 2026 – FY 2029 Key Milestones

- Assess models (material models, transport models, and analytics) for general model compatibility, model interoperability, and model scalability in support of the Aging and Lifetimes digital twin project.
- Build and demonstrate automated digital twin software stack to include data pipelining tools that will ingest and feed data-aware virtual models for components and assemblies of components.
- Achieve Technology Readiness Level (TRL) 7 for Active Fast Neutron Inspection (AFNI), Acoustic Resonance Spectroscopy (ARS), Analytical Non-Destructive Testing (ANDT), and Spectrally Encoded Imaging (SEI).
- Develop computer-aided design (CAD) drawings and requirements for in-situ shelf-life sensor placement and operation.
- Complete design definition, including mechanical, electrical, and software definition required to fabricate and produce fully functional diagnostic prototypes at the production agencies.
- Create model development/implementation roadmap using artificial intelligence tools and develop plans for both supervised and unsupervised training of models.
- Complete transition of the Rapid Gas Analysis technique which will improve efficiency of tritium reservoir function tests in Core Surveillance.
- Complete development of the Shell Acceleration Initiation Train (SAIT) test which improves understanding of high explosives and replace the existing snowball test.
- Continue development of new non-destructive diagnostic for transition and deployment to core surveillance as identified in the Component Evaluation Program Planning Committees.

FY 2023 Accomplishments

- Performed simulations of full scale accelerated aging tests for validation of Diffusion ReACtiOn (DRACO) application and updated sink model to include full war reserve configuration for insertion into DRACO.
- Updated pit model with latest surveillance data and assessed various platforms for Monte Carlo simulation options.
- Developed machine learning approach utilizing testing, modeling, and simulation to predict corrosion response across a range of environments.
- Demonstrated computed tomography with a laser driven X-ray source.
- Continued implementation of the Spectrally Encoded Imaging (SEI) / Deadzone Cutback Test (DZC) at Pantex and demonstrated a test shot.
- Completed analysis to assess the ability of the Shell Acceleration Initiation Train (SAIT) test to resolve insensitive high explosive corner turning and dead zones.
- Developed methods for detecting deviations from expected geometry of components in a glovebox environment using photogrammetry.
- Developed a turnkey vapor-phase water measurement instrument to automate sample preparation and analysis in production and surveillance gas analysis.
- Completed recovery plan and continued high voltage testing of E-gun rebuild to re-establish capability at Pantex.
- Prepared testing of the Active Fast Neutron Inspection prototype from Oak Ridge National Laboratory at Y-12.

- Completed characterization of the first accelerated aging plutonium alloy and summarized the synthesis and characterization of this alloy.
- Developed and documented roadmap and vision for future system digital twins, including delineation of required inputs.

Aging and Lifetimes
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Aging and Lifetimes $87,260,000	**Aging and Lifetimes $60,072,000**	**Aging and Lifetimes -$27,188,000**
• Developed customized Accurate Detonator Advanced Performance Testing (ADAPT) tests and analysis capabilities to investigate holistic detonator performance. • Continued maturation of advanced diagnostics, including the Multi -Mass Leak Detection tools, the Acoustic Resonance Spectroscopy State-of-Health Analyzer, and the Shell Acceleration Initiation Train (SAIT). • Assessed components to inform material and component aging models. • Updated and published aging and lifetime predictions used to assess weapon component lifetimes. • Developed validated understanding of energetic material degradation resulting in corrosion of critical elements in components. • Developed validated understanding to inform predictive models of cracking that lead to loss of hermeticity. • Developed structural response model that enables predictions of degradation caused by embrittlement. • Quantified mechanical degradation in epoxies, encapsulants, and foams in stockpile environments and their effects on surrounding components. • Developed validated capability to inform lifetime estimates of detonators, isolators, and other energetic components. • Completed aging models for high-risk components.	• Complete initial proof-of-concept methods and refine performance pipeline components to enable digital twin models of components and component assemblies (to include code parallelization, writing custom-software, adaptive mesh refinement, load rebalancing, etc.). • Port relevant models into compatibility and extensible code environments. • Compare predictive aging models to legacy data sets. • Develop diagnostic implementation roadmaps and achieve TRL 6 for a suite of modern surveillance diagnostics (including AFNI, ARS, ANDT, and SEI). • Identify critical measurement properties and corresponding diagnostics for shelf-life units. • Benchmark testing of novel pit non-destructive evaluation diagnostic. • Develop execution plan to sunset legacy diagnostics. • Evaluate methodology to convert existing non-destructive evaluation data to usable digital format. • Collect existing semi-empirical models to be partially calibrated against data. • Support material compatibility and aging assessments required to mature W93 component technologies. • Develop methods and capabilities to advance the science of accelerated aging to ensure reliable aging performance of new stockpile materials.	• Maintains efforts aligned to the program of record and the FY 2026 *Modern Surveillance Methods* SCDS pegpost.

Engineering and Integrated Assessments
Stockpile Responsiveness

Description
NNSA executes the SRP as a science, engineering, and technology program to exercise capabilities to proceed rapidly from clean sheet designs through prototyping, testing, and development for production and qualification. The program seeks to identify and demonstrate opportunities to accelerate the nuclear weapons lifecycle through cross-cutting innovation in processes enabled by advanced technologies. In particular, the program pursues new production and qualification techniques to dramatically accelerate the rate at which qualified components can be produced, while reducing costs and complexity. SRP in particular works from a cross-cutting system perspective to identify technologies that enhance warhead or production system performance, particularly when combined with other system enhancements to improve safety, surety, feasibility, cost, and time to produce and qualify the system.

In the conduct of its activities, SRP is guided by its statutory objectives to exercise and enhance capabilities required to support all phases of the joint nuclear weapons lifecycle process, to transfer knowledge and skills to the newer generation of nuclear weapon designers and engineers, and to strengthen integration between DoD and NNSA. A significant emphasis of the SRP is on laboratory-production plant collaborations focused on augmenting production responsiveness. The three nuclear weapon laboratories (LANL, LLNL, and SNL) are designated as design agencies (DAs), while the production plants (Pantex and Y-12, KCNSC, and SRS) are designated as production agencies (PAs). LANL and SNL hold both a PA and DA designation because of their production mission responsibility for select components.

SRP activities are undertaken with the view that modernization and other potential responses to future challenges will require reinvigorating the development process for new systems or subsystems employing new technologies and materials. Such development necessarily invokes increased technical risk beyond the limited risk presently accepted in LEP planning. To enhance capabilities to address this risk, SRP program activities described below are chosen in part to demonstrate the ability to accelerate the design, prototype, test cycle as a learning mechanism that offers insights into methods to decrease the time and cost to develop a producible and qualifiable system that can support a national nuclear deterrence need.

Stockpile Responsiveness activities include:
Acceleration of the Nuclear Weapons Development Lifecycle and Reduction of Costs – The highest priority identified by the NWC and Congress is for SRP is to examine alternative approaches to design, manufacturing, certification, and qualification to accelerate the timeline for the nuclear weapons lifecycle and reduce costs. Because the SRP lies expressly outside the acquisition process, the SRP can take risks without impacting planned LEPs or detracting from confidence in the present stockpile. It can demonstrate the potential for alternative processes and materials to deliver nuclear weapons components and systems rapidly. The emphasis of this effort is not abstract nuclear weapons design efforts but starts with design for manufacturability so that production and qualification issues are addressed and ameliorated early in the design and prototyping cycle.

Analysis of Emerging Threats and Technology Challenges and Opportunities – This activity uses laboratory technical expertise to analyze the consequences of emerging threats, to project technology trends, and to understand the implications for our deterrent on time scales consistent with the lifecycle of stockpile systems, which can greatly exceed the time horizon of Intelligence Community analyses. This effort supports ad hoc technical teams assembled to conduct rapid analyses of issues and scenarios and supports analyses executed on behalf of the Combatant Commands, principally U.S. Strategic Command.

Challenge Problems – Significant one-year to multi-year, multi-site efforts to exercise integrated nuclear weapons design capabilities against potential future threats. These look at problems beyond the time frame of nuclear weapons acquisition activities to explore design for manufacturability and the certification and qualification challenges presented in such designs. These problems set a systems context for exploring manufacturing, prototyping, and testing issues. To date, NNSA, with the concurrence of the DoD, has focused on two challenges: hard and deeply buried target defeat and defended target defeat. They further reinvigorate the ability to design and develop integrated systems using new technologies and capabilities and provide the next-generation experience in the trade-offs needed for design optimization. The goal of these

efforts is not paper studies to inform acquisition but as concepts that inform problems to be solved in production responsiveness efforts.

Prototyping, Testing, and Flight Testing – Providing the next generation of designers and engineers hands-on experience in system development, achieved through exercising, and accelerating the design, build, test cycle to overcome the technical risk in new technology development. This includes building and testing of non-nuclear prototypes of engineered systems and components, including accelerated hydrotest, environmental testing and flight tests of non-nuclear prototypes. The program is exploring the use of commercial launch providers who build the missile and take responsibility for range operations to develop and demonstrate low-cost, high tempo flight testing to accelerate the development of systems dependent upon new technologies, configurations, and materials. A key goal of this activity is providing junior staff experience in the process of turning ideas into a working system.

Highlights of the FY 2025 Budget

- Continue to build on creative and highly productive design agency/production agency (DA/PA) collaboration efforts to develop responsive manufacturing and qualification processes including methods to execute design for manufacturability:
  - Execute a multi-year preparatory exercise across the DAs and PAs to exercise and identify opportunities to accelerate the nuclear weapons lifecycle. In support of this:
    - Continue maturing advanced manufacturing technologies along with on-machine metrology and inspection methodologies to accelerate production and qualification for additively manufactured high explosives, metals for mounts and structures, and polymer components.
    - Continue deploying digital collaboration and digital engineering tools complex-wide to accelerate the exchange of design and production information across the development team.
    - Exercise design for manufacturability through cross-disciplinary teams of design and production agency technical staff on prototype systems that insert new manufacturing technologies that can shorten the production timelines and costs of capabilities needed for modernization. Examine concepts such as spiral development to improve responsiveness of the design and manufacturing lifecycle.
    - Prototype and document processes for life-cycle acceleration, including model-based engineering, model-based system engineering, and design-agency/production-agency hardware prototyping and manufacturing acceleration.
    - Continue to exercise and enhance efforts to fill a cross-complex gap in rapid turnaround prototyping fabrication capabilities.
  - Demonstrate performance and insensitivity of new energetics to allow qualification as IHE.
  - Continue the development of Artificial Reality / Virtual Reality tools at the Production Agencies to accelerate production planning, tooling, and fabrication and assembly processes with a particular focus on enabling early performance of safety reviews and issue resolution.
- Continue to demonstrate commercial flight test capabilities through the ongoing RedX program at LANL with commercial partners to provide high tempo, high fidelity flight testing for system development. Activities under this include multiple design-integrate-test cycles and joint test opportunities for Defense Programs and military service partners. In particular SRP will build and flight test two prototype systems demonstrating higher levels of integration and increased launch platform performance.

FY 2026 – FY 2029 Key Milestones

- Use DA/PA collaboration to demonstrate the ability to progress from a clean sheet design through demonstration prototype in two years to include hydrotesting, flight testing, and environmental testing using digital engineering.
- Explore new manufacturing techniques and process improvements leading to a more agile and responsiveness production facility.
  - Deploy digital twin technology for manufacturing machines to shorten production process development.
  - Implement demonstrated machine learning technologies to optimize and accelerate design phase.
  - Continue deployment of responsive production technologies and develop associated designs optimized for manufacturing.

  - Develop and demonstrate a framework for weapon development that reduces to the minimum high-cost integrated system testing for certification by leveraging modeling capabilities.
  - Prove out the design methodology, manufacturing strategy, processes, and cost requirements to implement a spiral development approach.
- Work in partnership with DoD stakeholders to develop and demonstrate system analysis capabilities that can enhance the Nation's nuclear deterrent.
- Use the prototype spiral development approach to demonstrate the ability and explore challenges to achieve cost effectiveness in design and production with respect to the program of record.
- Continue to demonstrate an accelerated design/build/test cycle to increase the speed of learning in developing, adapting, and integrating new technologies.
- Continue to explore methods to reduce time, cost, and footprints for product qualification.
- Deliver the FY 2027 SCDS *Preparedness Exercise* pegpost that will exercise joint design and production agency personnel in pursuit of more responsive warhead development.

FY 2023 Accomplishments

- In support of production responsiveness, SRP fully integrated the production plants into the SRP program to explore issues from design for manufacturability to specific production processes and improved methods for qualification.
  - Explored potential new materials and manufacturing capabilities that could shorten the delivery of long lead time components for stockpile systems.
  - Designed, fabricated, and tested the first iteration of prototype hardware that could be leveraged for multiple applications.
  - Deployed complex-wide digital collaboration tools to accelerate data exchange and speedup collaboration between design and production agencies.
- Continued development and demonstration of the use of commercial launch services to provide low-cost, high tempo flight testing required to integrate modern technologies, configurations and materials into systems required under stockpile modernization. Executed two flights of LANL prototype systems integrating new technologies at White Sands Missile Range using rockets and launch services provided by X-Bow.
- Completed the NWC task on Hard and Deeply Buried Targets (HDBT) defeat by examining a wide range of design options that could be mated to potential DoD delivery systems.
- Contributed to the development of the next generation of leaders by using young and mid-career technical staff to lead design teams and technology development teams. Training early and mid-career individuals, the program exercised processes to manage work with DoD organizations to explore alternatives to address future challenges to the deterrent.
- Performed hypersonic reverse ballistics testing at the Arnold Engineering Development Complex (AEDC) at Arnold AFB, along with several other small-scale tests, in preparation for a series of two hypersonic sled track tests. The first test was executed at the Holloman AFB High Speed Sled Track to prove out the rocket system for an FY 2024 system demonstration test.
- Reinvigorated DOE reentry vehicle prototyping capability enabling earlier execution of integrated component certification activities and system-level safety tests.
- Delivered the *Status of and Plans for Projects and Activities within the Stockpile Responsiveness Program* annual report for FY 2023.

Stockpile Responsiveness
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Stockpile Responsiveness $63,742,000	**Stockpile Responsiveness $70,000,000**	**Stockpile Responsiveness +$6,258,000**
• Provide the younger generation of designers and engineers with experience in developing rapid solutions to stockpile system issues by developing and employing modern technologies and methods and performing tests to prove out the solutions. • Continue DA/PA efforts to develop advanced manufacturing and production technologies that can accelerate the delivery of long lead time materials and components needed for testing and system development. • Develop high tempo hydrotesting, flight testing, and environmental testing capabilities. • Support analyzing and developing approaches to addressing high priority future threat scenarios in consultation with the Department of Defense. • Deliver most deliverables for the SCDS FY 2024 *Rapid Prototype Cycle* pegpost that will build an engineering prototype, execute supporting testing, and develop tools to improve cross-site collaboration in areas like digital engineering. • In collaboration with Advanced Certification and Qualification, develop alternative approaches to qualification and acceptance testing that can reduce costs and time frames as well as laboratory and production facility resources.	• Develop rapid cycles of prototyping and testing and apply these to prototyping exercises to accelerate the nuclear weapons life cycle. • Strengthen DA/PA collaborations to enhance production responsiveness. • Identify and address shortfalls in prototype fabrication capabilities necessary to support rapid prototyping. • Advance development of accelerated flight-testing and ground testing capabilities.	• Enhanced DA/PA collaborations to focus on enhanced production responsiveness. • Conduct additional prototyping exercises to identify opportunities to accelerate the nuclear weapons life-cycle. • Scale up the use of commercial launch services to demonstrate more integrated prototype payloads and more representative flight profiles.

Engineering and Integrated Assessments
Advanced Certification and Qualification

Description

Advanced Certification and Qualification (ACQ) develops tools and methods to ensure there is a certification path for stockpile systems and components in the absence of additional nuclear explosive testing. It integrates modeling/simulation, science, technology, and engineering advancements to facilitate certification of future life extension programs (LEPs) and new warheads. Additionally, ACQ, in collaboration with Advanced Manufacturing Development and the Stockpile Responsiveness program (SRP), explores emerging methods to accelerate the qualification of components and manufacturing processes and reduce costs and laboratory and plant facility requirements. In support of modernization initiatives, ACQ has moved from understanding the certification basis for the legacy stockpile to developing certification methodologies for the stockpile as it is evolving, including planned LEPs and modern systems needed in the future. ACQ is exploring the qualification benefits and challenges of modular architectures proposed for future stockpile systems.

More specifically, Advanced Certification and Qualification: (1) develops certification methodologies and integrates new experimental data into common models and assesses impacts on stockpile performance, (2) develops qualification paths for advanced manufacturing, replacement materials, and revolutionary technologies, (3) conducts certification readiness exercises to explore certification and qualification challenges in technologies that are being developed or demonstrated for future LEPs, and (4) explores the certification challenges of advanced surety technologies.

ACQ provided funding for Kansas City Nuclear Security Campus (KCNSC), Y-12, and Pantex to develop qualification methodologies for advanced manufacturing that decreased the qualification timelines and enhanced the acceptance rate.

Highlights of the FY 2025 Budget

- Develop certification approaches for systems and components responsive to stockpile modernization initiatives to strengthen the certification basis for the new designs of modern weapons.
- Develop capabilities to enable assessment and qualification of designs that enable agility to meet emerging threats and changing environmental requirements.
- Refine in situ inspection and link to acceptance for both traditional and additively manufactured (AM) parts.
- Transfer scalable advanced manufacturing capabilities with built in qualification approaches.
- Develop approaches to accelerate and streamline qualification efforts for new manufacturing methods, materials, and components to reduce time and costs to introduce into the stockpile and to address and manage the inherent technical risk in new approaches to shorten the delivery schedules of upcoming programs of record.
- Continue a certification readiness exercise to assess the qualification readiness of proposed modular architectures to improve the flexibility and maintainability of stockpile systems and reduce lifecycle costs to extend the functional life of the future deterrent.
- Investigate the approach to certification of a novel approach to future systems outside the bounds of legacy stockpile.
- Execute hydrodynamic tests to support improved technologies, raise TRLs and MRLs, and demonstrate certifiability.
- Continue to access the archive of nuclear test data, study of failure modes, and other advanced methods to expand in certification basis of upcoming sustainment programs and for future weapon systems.
- Conduct experiments supporting product-based qualification methods of components made with advanced manufacturing to not be tied to material and process limitations.
- Exercise the certifiability of reuse, surety, and hardening concepts, as well as concepts incorporating new manufacturing technologies.
- Develop Advanced Materials qualification methodology to enable component material replacement options with a qualification path to reduce production time constraints.
- Advance microstructure-aware simulation capability and deploy production codes for designers to span micro- to macro-scale behaviors.
- Assess new options and materials and manufacturing techniques for thermal protection systems with properties unique to the NSE and develop qualification methodologies to support identified needs for modern deterrents.

- Mature the common qualified testers and common calibration improving flexibility to support future products, reducing long development, build, and qualification cycles with maximum reuse of pre-qualified software and hardware and minimize outages.
- Develop new inspection techniques to validate and certify new complex geometries produced by advanced manufacturing techniques.

FY 2026 – FY 2029 Key Milestones

- Continue to develop understanding of the impacts of stockpile modernization requirements on certification and qualification methodologies and develop responses to those impacts.
- Support qualification of AM structures and qualification methodologies for materials in non-destructive applications.
- Perform hydrotests to understand the scaling of performance with dimensions in IHE systems.
- Perform hydrotests to certify PBX9701 and PBX9751 HE performance to maintain options for future weapon systems.
- Advance the machine learning toolkit for certification and qualification.
- Develop a certification strategy for non-standard primaries and secondaries.
- Define performance-based requirements for major materials and components to improve manufacturability.
- Develop and implement common testing and qualification methodologies at the design agencies and the production plants wherever achievable to reduce redundancy and optimize resources.
- Define the design space envelope with high confidence for certification to speed up design timelines, and lower development risks for future weapon systems. Support qualification efforts for advanced materials.
- Define qualification methodologies for new thermal protection system materials.
- At production plants, develop common testers for qualification and mature model-based product acceptance methods.
- Develop methods to qualify builds of complex geometric structures.

FY 2023 Accomplishments

- Advanced in-situ inspection technologies to accelerate production rates and yields and reduce qualification testing for new manufacturing technologies, including additive manufacturing of metals and high explosives.
- Designed and delivered survivable test enclosures for thermomechanical shock experiments on advanced materials.
- Expanded experimentally validated meso-scale simulation capability for AM materials and components.
- Built capability for development and testing of advanced thermal protection system materials.
- Developed methods for AM HE, producing large components at Advanced Manufacturing of Energetics Facility.
- Performed key experiments for optically initiated detonators including demonstration of equivalence of performance with traditional detonation processes with alternate HE formulations.
- Begun building prototype (with SRP) a brand-new Nuclear Explosive Package for use in the Agile Processes and Technologies (APT) demonstrator that was designed for certifiability and manufacturability.
- Sponsored (with DE) integration exercises with AFRL to inform the impact on certification for future flight bodies.
- Prepared a hydro test in support of ECSE technology development involving a novel design and new materials.
- Matured the ability to perform acceptance testing using model-based product definition.
- Strengthened and improved nuclear enterprise assurance inspection techniques.
- Installed inline inspection equipment to monitor in-process build quality.
- Flew thermal protection system candidates on low trajectory to monitor real environment performance to validate models for qualification purposes.
- Supported the use of Lean/Agile product development and digital engineering for prototype development and production in support of the FY 2024 SCDS *Rapid Prototyping Cycle* pegpost.
- Conducted ACQ Workshop to foster collaboration and understanding between all participating sites.
- Delivered RX-72 explosive charges for hydro testing.
- Performed tests on optimized complex structural components manufactured through AM.
- Conducted high consequence, fast-paced test series (Carbonara) to determine material behavior under shock conditions.
- Installed 8 of 9 machine health monitoring units to minimize process downtime, provide consistent product, and identify potential problems prior to failure as portion of the Smart Factory initiative.
- Matured common qualified testers and started common calibration initiatives.

Advanced Certification and Qualification
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Advanced Certification and Qualification $58,104,000	**Advanced Certification and Qualification $59,000,000**	**Advanced Certification and Qualification +$896,000**
• Addressed impacts of stockpile modernization on certification and qualification methodologies. • Continued DA/PA collaborations to accelerate qualification processes and methods for new materials and manufacturing processes. • Conducted fast turnaround test series to validate material behavior (Carbonara). • Completed a certification readiness exercise to assess the qualification readiness of proposed modular architectures to improve the flexibility and maintainability of stockpile systems and reduce lifecycle costs. • Conducted experiments supporting product-based certification methods of components made with advanced manufacturing. • Developed Advanced Materials qualification methodology to enable component material replacement options. • Assessed new options and materials and manufacturing techniques for thermal protection systems and develop qualification methodologies using modeling/simulation. • In collaboration with Stockpile Responsiveness Program, develop alternative approaches to qualification and acceptance testing that can reduce costs and time frames as well as laboratory and production facility resources.	• Conduct certification readiness exercises. • Prepare hydrodynamic tests outside the existing POR to support certification, safety, and performance testing. • Support product-based qualification methods with advanced manufacturing techniques to include AM. • Address qualification gaps and apply new measurements approaches to accelerate acceptance of existing component technologies and to enable acceptance of revolutionary technologies. • Assess materials and validate models from micro to macro scales. • Provide qualification testing for novel high explosive formulations.	• Address the qualification of new technologies developed under Weapon Technology and Manufacturing Maturation with priority on technologies considered for insertion in the W93 and future systems.

Stockpile Research, Technology, and Engineering
Inertial Confinement Fusion

Overview
The Inertial Confinement Fusion (ICF) program provides high energy density (HED) science capabilities and expertise that support research and testing across the breadth of the Stockpile Stewardship Program (SSP). Its two-fold mission is to meet immediate and emerging HED science needs to support the deterrent of today, and to advance the R&D capabilities necessary to meet those needs for the deterrent of the future. Since most of the energy in a nuclear weapon is generated by matter in HED conditions, understanding the behavior of matter and energy in the HED regime is critical to understanding and predicting the performance of both nuclear weapon primaries and secondaries, as well as the response of weapon components to extreme hostile radiation environments.

The ICF program enables access to and study of the HED regime through work executed by three subprograms:
1. **HED and Ignition Science for Stockpile Applications** develops and matures HED experimental platforms and computational tools, enabling partners across the nuclear weapons programs to investigate weapons physics phenomena and material behaviors for near-term SSP applications and designs. The execution of complex physics experiments will push the boundaries of understanding within HED science to support pursuit of high yield capabilities for next-generation stockpile science.
2. **ICF Diagnostics and Instrumentation** establishes new diagnostic capabilities and experimental support systems through the research and development of specialized technologies necessary to execute experiments studying matter under extreme HED conditions relevant to nuclear weapons performance.
3. **Facility Operations** provides the support and services required to ensure the safe and efficient operations of the national HED facilities, including operations, preventative and backlogged maintenance, load and target consumables, and the research and engineering to sustain facility capabilities. These facilities, the NIF at LLNL, Z at SNL, and Omega at the University of Rochester's Laboratory for Laser Energetics (LLE), represent a complementary set of capabilities designed to meet the diverse needs of weapons physics, the pursuit of higher yields, and the exploration of fundamental HED science.

The ICF program leverages its experimental design expertise and computational modeling tools, diagnostic technology, target engineering and fabrication infrastructure, and national HED facilities to ensure high fidelity experimental capabilities and data are available to support a range of NNSA missions. Its capabilities are used across the NNSA to assess and certify the existing stockpile, inform design decisions for current life extension programs, investigate hostile nuclear environments, and support research by DoD and key international partners. The program represents the only experimental option available to address many of the weapon relevant HED science challenges without resuming underground explosive nuclear testing. Additionally, NNSA recognizes the important national interests in fusion energy and supports initiatives in development through collaborative work in specific areas of common interest with the NNSA stockpile stewardship mission. Our investment in the knowledge and facility capabilities of inertial confinement fusion strengthens broader Departmental efforts in inertial fusion energy (IFE).

The ICF Program is focused on:
- Maturing HED stockpile science concepts and platforms to address key gaps in fundamental physics understanding.
- Conducting R&D to improve quality of existing targets and explore new target designs to achieve higher yields.
- Utilizing a robust ignition-class platform for applications relevant to weapon outputs, environments, and effects.
- Exploring innovative and disruptive target designs, diagnostics, drivers, simulation capabilities, and analytical tools to maintain leadership, challenge program scientists, and advance physics understanding to support the priorities of SSP.
- Maintaining the technical leadership and capabilities necessary to recruit, train, challenge, and retain the highest caliber of scientists and engineers at all three national HED facilities to engage in stockpile stewardship and to pursue world-leading research, while preparing to meet the stockpile science challenges of the 2030s and beyond.
- Promoting cross-laboratory collaboration and external engagement to improve program efficiencies and ensure continued global leadership while pursuing high technical risk, high reward research efforts.
- Extending the lifetime of NIF, Z, and Omega, to include making progress on previously backlogged maintenance.
- Acquiring information at current scales to inform cost, scope, and schedule for any future experimental investments.

Inertial Confinement Fusion
HED and Ignition Science for Stockpile Applications

Description

This subprogram supports R&D in HED science, including the study and use of thermonuclear fusion, enabling partners across the nuclear weapons programs to explore weapons physics phenomena for near-term applications and to pursue high yield capabilities for next-generation stockpile science needs. In the HED state, materials experience pressures greater than one million earth atmospheres and reach temperatures and densities far exceeding those of normal or condensed matter, generating complicated behaviors predominantly described by plasma physics. This complex and dynamic state dominates energy generation in nuclear weapons, making its study a key component of the SSP. Research activities for this subprogram include theory, experiments, modeling, design, and engineering, and are identified by the following areas: assessment platforms, fusion yield platforms, simulations and analysis methods, and driver physics and development.

- **Assessment Platforms** develops capabilities that enable stockpile assessment science, LEPs, nuclear modernization, and radiation effects to resolve key gaps in understanding within dynamic material properties, fluid and plasma hydrodynamics, hydrodynamic instability-induced mix, burn, boost, radiation transport and opacities, and yield applications relevant to nuclear weapon outputs, environments, and effects. Coordination with the weapons programs is necessary to conceive, mature, and provide platforms to execute experiments at all the national HED facilities to meet their near-term stockpile stewardship needs. These tools provide access to materials data at extreme conditions, allow the study of hostile radiation environments, and make it possible for NNSA, Department of Defense users, and key international partners to probe a variety of complex weapons physics phenomena.

- **Fusion Yield Platforms** embodies the long-term R&D efforts to advance understanding of fusion implosions and develop multi-megajoule (MJ)/burning plasma platforms, and eventually high-yield fusion platforms for next generation stockpile applications. When realized, these capabilities will be critical to the long-term viability of the SSP, particularly the future qualification of nuclear components, the assessment and certification of the next generation of nuclear weapons in the full range of relevant HED regimes, and the investigation of a range of complex physics that has been out of experimental reach since the cessation of underground nuclear explosive testing.

  Of note, the December 2022 NIF experiment exceeded current predictions and achieved a historic milestone ("ignition") by generating more fusion energy out (3.15 MJ) than laser energy used to drive it (2.05 MJ) while overcoming the cooling effects of X-ray losses, electron conduction, and implosion expansion. Since December 2022, ignition has been achieved four more times, including a new fusion yield record of 5.2 MJ set on February 12, 2024. This subprogram will continue to advance understanding and utilization of nuclear ignition through the development of robust platforms for SSP applications. Additional focus will be on acquiring information at current scales to justify cost, scope, and schedule for any future investments in experimental capabilities for attaining higher fusion yields.

- **Simulation & Analysis Methods** matures and enhances codes, simulation techniques, and analytical methods for HED physics experiments to improve its predictive capability and optimize its data use across all mission areas in support of this subprogram's short- and long-term efforts.

- **Driver Physics & Development** propels forward research to explore and improve the ability to couple driver energy to targets in all experimental configurations within the HED regime to maximize the fidelity of weapons physics experiments and continue to improve the performance of integrated fusion experiments.

Highlights of the FY 2025 Budget

- Fusion Yield and Assessment Platforms
  - Develop and mature novel laser- and magnetic-based platforms and perform verification experiments to support Assessment Science, for example, volume burn platforms for accessing unique characteristics of mix and burn.
  - Field magnetized linear inertial fusion (MagLIF) platform for experiments testing similarity scaling theory.
  - Verify laser plasma instabilities (LPI) and imprint mitigation predictions using high bandwidth laser FLUX at Omega.

    - Perform design studies with NIF to improve fusion yield and driver-target coupling and to understand compression limits in laser-driven targets, implosion conditions, and LPI risk at higher laser energy.
    - Execute physics experiments to test magnetic direct drive designs and reduce driver requirements for higher yields.
    - Test high pressure platforms on Omega for to improve implosion performance.
- Simulation and Analysis Methods
    - Improve predictive capability through (1) enhancements to existing hydrodynamic codes and common modeling frameworks as well as (2) development of next-generation ICF codes.
    - Enrich data analysis techniques for efficient experiment and model comparisons.
- Driver Physics and Development
    - Understand and advance delivery of energy to target within the HED regime using laser- and pulsed power-based architectures.
    - Research radiation sources using short pulse high intensity lasers.

FY 2026 – FY 2029 Key Milestones

- Fusion Yield Platforms and Simulations
    - Refine driver requirements for magnetic direct drive (MDD) paths to high yield and volume burn (VB) (FY 2026).
    - Assess prospects for high yield with laser indirect drive (LID) and laser direct drive (LDD) (FY 2026).
    - Determine the limit of implosion efficiency in LDD on Omega (FY 2028).
    - Assess options to increase margin of high yield MDD designs (FY 2029).
- Assessment Platforms and Simulations
    - Conduct technical assessment of VB platforms on current and future facilities (FY 2026).
    - Develop LDD options for enhanced X-ray options, as recommended in the FY 2022 LDD strategy (FY 2027).
    - Achieve VB data objectives defined in the FY 2023 VB strategy, supported by the FY 2026 assessment (FY 2028).
- Driver Physics and Development
    - Set next-generation laser requirements (FY 2028).

FY 2023 Accomplishments

- Broke previous record neutron yield from deuterium-tritium targets on the NIF and achieved yields greater than 1 MJ six times, including three fusion ignition successes in calendar year 2023, demonstrating a robust megajoule platform has been delivered.
- Continued to explore new platform designs for improved compression and low mix on the NIF to attain higher yields.
- Developed theoretical framework for scaled-up performance of MagLIF implosions and conducted a detailed study to provide insights into scaling MagLIF targets to a next-generation driver, demonstrating for the first time that impurities mixed into the target can enhance fuel magnetization while degrading performance.
- Successfully completed the double-cylinder experimental campaign at Z which was designed to challenge and validate mix-hydrodynamics modeling of deceleration phase instability growth in ICF targets (in partnership with SAT).
- An innovative face-on radiography platform was developed at LLE to study the effects of micron-scale domes on a plastic ablator that are predicted to compromise the fuel-ablator interface.
- First successful shot with a radiochemical-doped high-density carbon capsule at NIF provides scientifically valuable data and opens possibilities for HED nuclear science.
- Resolved decades old mystery about shock-induced metallization of polystyrene with advanced density functional theory.
- Demonstrated successful first imaging of a high-Z inner shell in a double shell implosion at the NIF using the advanced radiographic capability, which was consistent with the size and shape of synthetic radiographs.

HED and Ignition Science for Stockpile Applications
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
HED and Ignition Science for Stockpile Applications $116,526,000	**HED and Ignition Science for Stockpile Applications $112,896,000**	**HED and Ignition Science for Stockpile Applications -$3,630,000**
• Advance understanding in key areas of megajoule yield and burning plasma science. • Resolve uncertainties in laser-driven target performance variability. • Explore portion of the design space for laser-driven targets with alternative target drive approaches.	• Develop and mature novel laser- and magnetic-based platforms and perform verification experiments to support SSP, for example, VB platforms for accessing unique characteristics of mix and burn. • Field MagLIF platform for experiments testing similarity scaling theory. • Verify code prediction for LPI and imprint mitigation using FLUX at Omega. • Perform design studies with NIF to improve fusion yield and coupling and to understand compression limits, implosion conditions, and LPI risk at higher laser energy. • Execute physics experiments to test designs and reduce requirements for higher yields. • Test high pressure platforms on Omega for to improve implosion performance. • Improve predictive capability through (1) enhancements to existing hydrodynamic codes and common modeling frameworks as well as (2) development of next-generation codes. • Enrich data analysis techniques for efficient experiment and model comparisons. • Understand and advance delivery of energy to target within the HED regime using laser- and pulsed power-based architectures. • Research radiation sources using short pulse high intensity lasers.	• Represents reprioritization of ICF program on near-term facility operations and sustainment - while balancing critical HED science experimental activities necessary to deliver on current needs within stockpile stewardship.

Inertial Confinement Fusion
ICF Diagnostics and Instrumentation

Description

The Inertial Confinement Fusion (ICF) Diagnostics and Instrumentation subprogram establishes novel diagnostic capabilities and experimental support systems at the three national high energy density (HED) facilities. Diagnostics developed within this subprogram underpin the scientific advances made in support of all HED experimental application areas, including Assessment Science (AS), nuclear survivability, and the pursuit of high fusion yield. They provide the key link between facility generation of HED conditions and the use of experimental data to validate models and resolve weapons physics issues. Improvements in diagnostic performance enable the extraction of essential physics phenomena of interest from complex and dynamic experiments. Recent investments in this subprogram have provided unprecedented experimental fidelity in the HED regime, allowing more useful information to be gained from each experiment, which is used by Assessment Science, Advanced Simulation and Computing, Stockpile Management, and other stockpile programs, for successful execution of their respective Stockpile Stewardship and Management Plan responsibilities.

Priority activities across this subprogram include: advancing new technologies through design and engineering of transformational diagnostics that provide unprecedented information from HED experiments and can be used across the HED facilities; fielding diagnostics based on known technologies to address local needs and to achieve programmatic deliverables at each HED facility; and meeting HED experimental requirements through new experimental capabilities and operationally efficient support systems. Efforts to advance these activities also include development of experimental platforms that expand the performance range of the advanced laser- and pulsed-power facilities, new cryogenics capabilities such as improved handling and positioning systems or improved control layer quality systems, and new experimental capabilities such as improved laser diagnostics for accuracy or beam balancing. Many of these developments, particularly the transformational diagnostics, are advanced through coordinating efforts and sharing expertise across the HED facilities.

Highlights of the FY 2025 Budget

- Research and develop highest-priority transformational diagnostics (as detailed in the National Diagnostics Plan for HED Science) at the three national HED facilities to improve the fidelity of data for studying physical phenomena relevant to stockpile work and supporting predictive modeling, specifically:
  - Field improved time resolved X-ray diffraction platforms at NIF and Omega for equation of state (EOS) measurements; research high resolution velocimetry and deep UV Thomson scattering at NIF and Omega.
  - Implement improved line-of-sight down-scatter neutron and gamma imaging at NIF to better understand compression.
  - Implement time resolved neutron spectroscopy diagnostic for NIF to better understand compression and coupling around stagnation.
  - Develop next generation hybrid CMOS sensors and high energy detectors for NIF, Z, and Omega; improve diagnostics (spectroscopy and time resolved diffraction) with use of hybrid CMOS sensors at NIF and Omega.
  - Implement the third line of sight hot-spot X-ray imager at Omega for exploring symmetry and hot-spot formation.
- Improve, field, and maintain key required local diagnostics and associated support systems to effectively execute experimental activities by capturing key data that will validate physics codes and reduce uncertainties in assessing nuclear weapons performance. This includes development of:
  - Improve extended X-ray absorption fine structure (EXAFS) diagnostic for Pu EOS measurement on NIF.
  - Neutron time of flight and X-ray streak diagnostics for Z for measurements around stagnation.
  - Develop and adapt diagnostics to provide data in the 10 MJ neutron yield environments at NIF.
  - Time resolved ultrafast X-ray imager for Z to measure evolution of plasma parameters.
  - Gaseous radiochemistry diagnostic for double shell target measurements on NIF and Z.
  - High-dynamic range/high-sensitivity gamma reaction history for ICF and AS measurements at Z.
  - 3D diagnostics for imploding shell and stagnation on Omega.
  - Particle and X-ray time-resolved diagnostics for hot-spot X-ray emission measurements at Omega.
  - Develop THz background detectors and THz spectrometers at Omega.
- Develop new experimental capabilities and diagnostic support systems to include:

- Advanced cryogenic and gas-filled system configurations for ICF and Assessment Science platforms on Z.
- Foam-coated implosion targets using additive manufacturing to mitigate laser imprint at Omega.
- Next generation magneto-inertial fusion electrical discharge system (MIFEDS) fabrication for Omega.
- Improvements on laser accuracy/performance and optics performance on NIF

FY 2026 – FY 2029 Key Milestones

- Develop and deploy transformational diagnostics, according to the National Diagnostics Plan, which will help acquire unprecedented information related to materials data, complex hydrodynamics, radiation flow and effects, and thermo-nuclear burn physics data.
- Develop and deploy local diagnostics as well as their associated analysis packages that can operate in harsh HED environments necessary in understanding radiation physics and the behavior of matter in the HED regime that are critical to predicting the performance of nuclear weapons and understanding both primary and secondary nuclear weapon physics.
- Develop and deploy new experimental capabilities and diagnostic support systems that provide improved efficiency and better performance.
- Collaborate between NIF and Z to deploy additional diagnostics on Z fully utilizing the capabilities of their pulsed power system.

FY 2023 Accomplishments

- Neutron imaging and gamma-reaction history diagnostics successfully showed markers of ignition on the December 5th, 2022 ignition shot at NIF.
- Neutron imaging team tested a novel scintillator at Omega resulting in improvement light output that will inform the polar line-of-sight imaging on NIF.
- Implemented a novel wide field-of-view imager on NIF to study plasmas formed in the drive phase of ICF hohlraums.
- Installed the prototype precision neutron time-of-flight diagnostic on Z.
- Completed conceptual design review for a high-resolution 2D neutron imager at Z.
- Completed physics requirements review for assessing mix in volume burn for inertial confinement fusion systems.
- Upgraded the NIF polar dilation X-ray imager to radiation tolerant film to enable imaging of > MJ neutron yields.
- Demonstrated the spectral resolution and collection efficiency of a modified toroidal spectrometer for extended X-Ray absorption fine structure (EXAFS) measurements.
- Completed testing of first commercially produced hCMOS wafers.
- Completed final design review for new X-ray streak camera on Z under NIF-to-Z technology transfer diagnostics effort.
- Demonstrated a proof-of-concept cryogenic target characterization system using Coherent Anti-Stokes Raman spectroscopy on Omega.
- Measurements of ^{182}Re conducted to inform radiochemical diagnostics on future NIF experiments.
- Completed first time-resolved diffraction measurements on iron at Omega and on lead at NIF.

ICF Diagnostics and Instrumentation
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
ICF Diagnostics and Instrumentation $73,460,000	**ICF Diagnostics and Instrumentation $71,578,000**	**ICF Diagnostics and Instrumentation -$1,882,000**
• Develop highest-priority transformational diagnostics to include: developing next-generation high resolution velocimeters for NIF and Omega to measure material properties at extreme conditions; developing Wolter/toroidal hard X-ray imagers at NIF to discern hot spot temperature; finishing a prototype diagnostic for time resolved diffraction on NIF and assessing options for Omega; developing next-generation hybrid CMOS sensors to increase measurement sensitivity at NIF, Z, and Omega; and installing gamma reaction history diagnostic on Z. • Improve, field, and maintain key required local diagnostics and associated support systems to effectively execute experimental activities by capturing key data that will validate physics codes and reduce uncertainties in assessing nuclear weapons performance. This includes improving X-ray detectors, imagers, and spectrometers (radiation hardening, imaging at high yield, time-resolution), optical diagnostics (streak cameras, VISAR), and nuclear diagnostics (burn history, neutron time of flight detectors, stagnation diagnostics, fusion yield). • Develop new experimental capabilities and diagnostic support systems to include work on target systems and infrastructure support capabilities, cryogenic systems and gas fill operation improvements, and improvements on laser accuracy/performance and optics performance.	• Develop highest-priority transformational diagnostics to include: developing next-generation high resolution velocimeters for NIF and Omega to measure material properties at extreme conditions; developing radiation hardened X-ray imagers at NIF to discern hot spot temperature; improving diagnostic for time resolved diffraction on NIF and implementing similar diagnostic on Omega; developing next-generation hybrid CMOS sensors to increase measurement sensitivity at NIF, Z, and Omega; and installing gamma reaction history diagnostic on Z. • Improve, field, and maintain key required local diagnostics and associated support systems to effectively execute experimental activities by capturing key data that will validate physics codes and reduce uncertainties in assessing nuclear weapons performance. This includes improving X-ray detectors, imagers, and spectrometers, optical diagnostics, and nuclear diagnostics. • Develop new experimental capabilities and diagnostic support systems to include work on target systems and infrastructure support capabilities, cryogenic systems and gas fill operation improvements, and improvements on laser accuracy/performance and optics performance.	• Represents reprioritization of ICF program on near-term facility operations and sustainment. Diagnostics & Instrumentation subprogram will support highest-priority diagnostics for all three major ICF facilities (NIF, Z, OMEGA).

Inertial Confinement Fusion
Facility Operations

Description

The ICF Facility Operations subprogram supports the suite of ICF experimental facilities. The NIF, Z, and Omega facilities, as well as the advanced target design and fabrication capabilities at LLNL, General Atomics, Z, Omega and LANL, are critical to explore material properties, hydrodynamics, weapon output, effects, and survivability, platform and diagnostics development, ignition, and high yield.

ICF Facility Operations provides not only the facilities but also diagnostics and targets essential to achieve the requirements of the national HED experimental plans. Diagnostic capabilities become part of the facility operations after the design stage is complete. Proper fielding, upkeep, and calibration of these diagnostics are required to maintain high-fidelity measurements and data expected to meet research objectives. Target fabrication is a key component of SSP experiments on NNSA's major HED facilities including NIF, Omega, and Z. The target is at the heart of the experiments and its designs and details change based on the goals of the program, with over 200 new designs yearly. Advanced target designs are being pursued at all facilities to explore aspects of energy coupling and to provide experimental platform for stockpile mission experiments. Target production and research include ongoing work at both NNSA laboratories and contractors to advance the ICF capabilities. General Atomics (GA) plays a critical role in providing targets for all four laboratories to meet NNSA experimental requirements in support of Stockpile needs. As target design specifications become more complex, so must the production process controls, including identification and development of new processes to advance the state-of-the-art. LLNL and GA have conducted in-depth internal reviews of the ignition platform target fabrication process. Findings from these reviews resulted in implementing changes to the target production process to make the fabrication and handling operations more robust to ensure that target components are available to meet NIF shot schedule. Both target production and research to enable advanced and next generation ICF capabilities are funded through ICF Facility Operations and the importance of target research and development to leverage Ignition conditions produced on NIF is extremely important.

The ICF facilities are aging and have urgent needs for sustainment to maintain the level of precision and system deliverables required to continue to advance yield and performance boundaries. Needs beyond routine maintenance have been identified in each facility's Sustainment Plan. For example, at NIF, some systems, such as the main amplifiers and final optic systems, are experiencing damage and degradation due to debris. The debris sources must be eliminated, and the existing optical assemblies must be removed, refurbished, or replaced. Other systems, such as the control system's embedded controllers, have become obsolete and are no longer supported by industry and must be replaced. At Z, legacy systems such as insulating oil, water, and gas systems require updates. A major concern for continued operations past 2030 is the degradation of components in the Z energy storage system, including more than 2,000 capacitors. Over the next five years, a significant investment will be made to sustain the ICF facilities and assure their continued contributions to stockpile stewardship in the 2030s.

Activities of facility operations are identified by operations, maintenance, load and target consumables, and the research and engineering required to sustain and enhance facility capabilities.

- **Operations:** Operation of the ICF facilities includes executing a shot or preparing for and/or recovering from a shot as well as the facility preparation and pre-/post-shot reviews necessary to assure that shots are machine-safe and optimized to achieve the user's goals. Advanced target facilities at LANL also provide unique access to new regimes of programmatic relevance.
- **Maintenance:** Each of these precision ICF facilities require a high level of maintenance, including the categories of preventative maintenance, reactive maintenance, and reliability/efficiency improvements. Preventative maintenance is routine maintenance intended to keep a system working properly. Reactive maintenance describes work on broken or impaired systems, including those maintenance items that were previously backlogged. Reliability and efficiency improvements incorporate minor system improvements to enhance reliability and/or efficiency but do not include significant improvements or new capabilities.

- **Loads/target consumables:** The loads and targets for experiments at ICF facilities require careful preparation and construction for each. These include the consumables of experimental campaigns as well as refurbishments necessary for key load/target hardware which is routinely refurbished or repaired.
- **Sustaining capabilities:** Assuring continued high performance and reliability is key to optimal scientific output. Each of the ICF facilities is over 10 years old and requires ongoing refurbishment including replacing obsolete and unmaintainable systems with updated equipment that utilizes technology improvements and implement reliability and efficiency upgrades to improve facility productivity. Independent of improvements to energy and power, the NIF, Z, Omega, and LANL facilities require a range of sustainment investments that the program is in the process of prioritizing. Such updates will be required to enable another decade of stockpile science on ICF facilities.
- **New capabilities:** To address gaps in the current experimental capabilities, the next-generation HED experimental facility capabilities will achieve a wider range of coverage required to access weapons-relevant regimes beyond the reach of current and enhanced HED experimental capabilities and provide agility and responsiveness to meet emerging Stockpile Stewardship problems and address currently unresolved weapon physics issues. There are two projects under consideration: an Enhanced Fusion Yield Capability (EYC) that will allow the capability to deliver a laser source over 3 MJ to the target, and a Next Generation Pulsed Power (NGPP) facility capable of delivering sufficient energy to conduct material research, radiation flow, hydrodynamic transport and demonstrate high-yield phenomena.

Assessment Science, Advanced Simulation and Computing, Stockpile Management, Weapon Survivability, and other stockpile program elements, as well as external mission partners including Defense Threat Reduction Agency and the United Kingdom's Atomic Weapons Establishment (AWE), leverage the capabilities developed by this subprogram.

Highlights of the FY 2025 Budget

- Provide operational facilities to obtain the key data that reduce uncertainty in calculations of nuclear weapons performance.
- Obtain data on the properties of high atomic-weight materials, such as uranium and plutonium, in new weapon-relevant HED regimes using the Z at SNL and the NIF at LLNL.
- Operate all NNSA-funded national HED facilities safely and efficiently in accordance with their Governance Plans.
- Refurbish and recapitalize the most critical systems as identified in the facility sustainment plans and prioritized by the program.
- Advance unique target design and development capabilities at LANL, LLNL, Z, Omega, and General Atomics.
- Manage and maintain a robust target fabrication line to advance R&D work in pursuit of the high-yield regime.
- Support the highest-priority HED experimental needs, within assessment science, nuclear survivability, and explore the MJ platform.
- Explore technology to support future facility investments, such as new approaches to energy balance, laser plasma instabilities (LPI), and improved energy coupling.
- Conduct programmatic studies required to support advancement of Enhanced Yield Capability (EYC, previously NIF Power & Energy Upgrade) and Next Generation Pulsed Power (NGPP) efforts.

FY 2026 – FY 2029 Key Milestones

- Execute experiments approved by ICF program management and the combined HED/ICF Council. This task is the top priority for the Facility Operations. Delivering on this priority requires well-maintained and calibrated facilities, quality targets, calibrated diagnostics, and highly skilled staff to execute the highly complex and precise HED experiment schedules.
- Assure that core experimental capabilities are proactively maintained by executing sustainment activities at key ICF facility systems necessary to maintain the performance levels of ICF facilities to meet stockpile work requirements.
- Mitigate implosion degradation mechanisms through target advancements.
- Continue to advance target R&D and ensure that a robust target production process is maintained to support ICF experimental needs as the program continues to explore high yield capability.
- Increase plutonium capabilities and number of experiments on both Z and NIF.
- Increase the fraction of tritium used in ICF experiments at Z.
- Estimate progressing activities for moving both NGPP and NIF EYC projects forward in FY 2026.

FY 2023 Accomplishments

- **NNSA's HED Facilities Operations:**
  - Executed 311 shots on NIF; 150 shots on Z; and 2061 shots on Omega.
  - Delivered the ICF 10-yr Facility and Infrastructure plan to Congress.
  - Briefed Congressional staffers on the ICF 10-yr Facility and Infrastructure plan.
- **High impact stockpile stewardship experiments:**
  - NIF successfully balanced and delivered the amount of energy needed to achieve ignition three times in the calendar year 2023.
  - Successfully executed LANL's double-cylinder experiment on Z, to challenge and validate modeling of deceleration phase instability growth.
- **Sustainment Activities on HED Facilities:**
  - NIF Sustainment activities:
    - Completed identification of key activities needed for NIF sustainment and began staffing managers to oversee, plan and execute sustainment work identified in the following 9 areas: 1) Amplifiers, 2) Final optics, 3) Optic processing, 4) Alignment and optic inspection, 5) Injection laser, 6) Target Fabrication, 7) Polar DIM, 8) Target Line Replacement Unit (LRU), and 9) Control and data system.
    - Demonstrated improved laser power accuracy and balance for SSP applications.
    - Initiated activities to implant and characterize He implanted delta-Pu sample.
    - Deployed fused silica debris shields for sustained operations.
    - Conducted first round of tri-lab independent assessment of driver requirement for pulsed power fusion need.
    - Delivered quality assembled High-Density Carbon (HDC) targets for ignition shots.
    - Improved high density carbon metrology process.
    - Improved screening process for HDC capsules.
    - Strengthened target production process to ensure availability of targets to meet stockpile research requirements. Advanced in-depth study of High-Density Carbon (HDC) capsule coating and polishing to allow for research and development of mitigations to HDC capsule imperfections.
    - Developed draft Mission Need Statement for CD-0 submission for the NIF EYC.
  - Z Sustainment activities
    - Z Pulsed Power facility:
      - Completed replacement of programmable logic controller.
      - Replaced gas house desiccant.
      - Completed repairs of 12 de-ionized water tanks.
      - Implemented an equatorial line of sight capability for Z.
      - Adopted an extended workflow process at Z that has improved robustness of shot operations and improved the efficiency (shot rate).
      - Initiated procurement of target fabrication machine upgrade.
      - Completed sustainment activities associated with X-ray diagnostics digitizer.
      - Completed procurement of neutron PMT and Image plate for sustainment.
    - Z Beamlet Laser (ZBL):
      - Initiated ZBL Laser system sustainment.
      - Completed design of aerotech motion controller upgrade.
      - Initiated flashlamp upgrade.
  - Omega Sustainment activities:
    - Completed identification of key activities needed to sustain Omega.
    - Began staffing project leaders to oversee, plan and execute sustainment work planned for Omega. Identified 54 distinct activities to address sustainment in the following 10 broad areas: 1) Facility wide, 2) Information Technology, 3) Target Fab, 4) Laser sources, 5) Beamlines, 6) Laser diagnostics, 7) Experimental Ops, 8) Target diagnostics, 9) Amplifiers, and 10) Power conditioning.

Facility Operations
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Facility Operations $440,014,000	**Facility Operations $498,356,000**	**Facility Operations +$58,342,000**
• Begin refurbishment and recapitalization of most critical systems as identified in facility sustainment plans. • Operate all NNSA-funded national HED facilities safely in accordance with their Governance Plans. • Support the highest-priority HED experimental needs within assessment science, nuclear survivability, and the pursuit of multi-MJ yield at NIF, Z, and Omega. • Advance unique target design and development capabilities at LANL.	• Continue refurbishment and recapitalization of most critical systems as identified in facility sustainment plans. • Operate all NNSA-funded national HED facilities safely in accordance with their Governance Plans. • Support the highest-priority HED experimental needs within assessment science, nuclear survivability, and the pursuit of multi-MJ yield at NIF, Z, and Omega. • Continue to advance unique target design and development capabilities at LANL. • Maintain a robust target production process to accommodate very tight target design specs in support of ignition shots and high-yield platform development work.	• Supports approximately 250 shots at NIF, approximately 150 shots at Z, and approximately 1,800 shots on Omega. • Prioritizes most urgent facility sustainment activities at NIF, Z, and Omega.

Stockpile Research, Technology, and Engineering
Advanced Simulation and Computing

Overview

The Advanced Simulation and Computing (ASC) program provides high-end simulation capabilities (e.g., modeling codes, computing platforms, and supporting infrastructure) to meet the requirements of the SSP. Modeling the complexity of nuclear weapons systems is essential to maintaining confidence in the performance of our stockpile without underground nuclear testing. The ASC program provides the weapon codes that provide the integrated assessment capability supporting annual assessment and future sustainment program qualification and certification of the stockpile. ASC is also an integral element of the Stewardship Capability Delivery Schedule (SCDS). ASC provides critical capabilities that help inform decision-making related to the sustainment of the nuclear stockpile. The program also coordinates with NNSA and other government agencies, including the Intelligence Community, to support nonproliferation, emergency response, nuclear forensics, and attribution activities. In FY 2025, the Capabilities for Nuclear Intelligence (CNI) program will be transitioned over to ASC. CNI provides SRT&E capabilities required for intelligence community assessments that provide critical weapon skills, training, and experimental opportunities and challenges for weapons designers and engineers.

ASC computing capabilities are the integrator for many of the investments in research, development, testing, and evaluation, and are the foundational tools that support the defense programs. The integrated design codes (IDCs) are mathematical and computational descriptions of nuclear weapons systems and physical descriptions of their functions. Combined with weapon-specific data and fundamental data measured by the experimental programs, these IDCs mitigate the need for underground explosive testing by supporting design studies, maintenance analyses, the Annual Assessment Reports, sustainment programs, SFIs, and weapons dismantlement activities.

The IDCs routinely benefit from needed improvements to the physics and improved algorithms that utilize new computational hardware which enable responses to issues such as material aging, new threats, and support for manufacturing and production. ASC capabilities that support the stockpile stewardship mission were built on the computing technologies commercially available over the past two decades and industry has evolved beyond and away from NNSA's scientific computing needs to provide increased computing power for general consumer markets. ASC must maintain currency with the computing industry to ensure continued performance of the IDCs on the next-generation compute platforms, as required to maintain a credible nuclear deterrent and address potential additional mission needs in non-proliferation, emergency response, nuclear forensics, and attribution programs.

The ASC program is executing several internal initiatives to leverage developing technologies and capabilities to support the sustainment of the nuclear stockpile. ASC established the Large-Scale Calculations Initiative (LSCI) in FY 2018 to determine the limitations and scaling potential of our current assessment capabilities. This initiative assesses the potential of current HPC platforms, codes, and qualified personnel by exploring physics calculations that are impractical for regular assessment capabilities. These limitations may be due to job sizes, time length of the code runs, or a combination of the two. The initiative pushes the national security laboratories to look beyond current computing abilities to make today's hero calculations those of routine business soon for a variety of NNSA missions.

The AI for Nuclear Deterrence (AI4ND) portfolio, starting in FY25, will subsume the previous Advanced Machine/Learning Initiative (AMLI). AI4ND aims to increase the use of commercially available artificial intelligence hardware, and further develop machine learning algorithms and technologies, to add to the ASC physics-informed simulation portfolio. Safe and trusted AI technologies can significantly increase efficiency, improve models to better match experimental data, and tighten the integration of multi-scale and multi-dimensional modeling efforts, while addressing concerns with validation of these techniques when new errors are introduced.

Another initiative across the national security laboratories is quantum computing (QC), which seeks to develop new methods and expertise in algorithm development and hardware evaluations to develop promising QC technologies suitable for nuclear weapon applications. The ASC program aims to drive efficiencies into the manufacturing process through its Production Simulation Initiative (PSI). Efforts such as the Simulation First initiative at KCNSC aim to incorporate physics-based simulation into production processes and operations to optimize solutions.

The Advanced Simulation and Computing program is composed of six subprograms:

1. **Integrated Codes** produces large-scale, full-physics IDCs that allow the performance of detailed nuclear weapons assessments without the need for nuclear explosive testing.
2. **Physics and Engineering Models** provides the models and databases used in simulations supporting the U.S. stockpile.
3. **Verification and Validation** brings the Integrated Codes and Physics and Engineering Models subprograms of ASC together with the Stockpile Management program to evaluate the capability of IDCs.
4. **Computational Systems and Software Environment** builds an integrated, balanced, and scalable computational capabilities, including HPC systems and requisite software stacks.
5. **Facility Operations and User Support** provides the facilities and user services required to enable nuclear weapons simulations.
6. **Capabilities for Nuclear Intelligence** provides the SRT&E tools to enable intelligence community assessments on foreign nuclear programs**.**

Due to synergistic connection and technical dependencies, ASC is tightly coordinated with the other SRT&E programs to meet its commitments to the stockpile stewardship, management, and modernization missions.

Advanced Simulation and Computing
Integrated Codes

Description

The Integrated Codes (IC) subprogram produces integrated design codes (IDCs) that enable detailed nuclear weapons assessments without the need for underground nuclear explosive testing. These full-system, multi-scale physics and engineering codes are used for stockpile assessments to support concept studies, certification, maintenance analyses, LEPs, Alts, SFIs, and weapons dismantlement activities. The IDCs represent the knowledge gained from experiments on NNSA's wide range of facilities and legacy nuclear explosive tests which support the Stockpile Management program and critical national security missions. These codes enable nuclear forensics, foreign assessments, and device disablement techniques related to nuclear counterterrorism efforts and the study of nuclear weapons behavior in normal, abnormal, and hostile environments, as well as outputs to enable effects estimates. These specialized codes enable simulation workflows, generate models or information used by the IDCs, and validate the IDCs by comparison with experimental data obtained from facilities, such as Z and NIF. In this way, IC is the foundational toolset for all activities and experiments within SRT&E and Defense Programs. The IC subprogram also maintains select legacy codes, is responsible for ancillary tools that support the weapons mission, and partners with the other subprograms to improve code capabilities, optimize high performance computing (HPC) platforms. Long-term technical goals for the IC subprogram are to provide credible simulation capabilities that cover all the relevant physics and maximize performance on current and future ASC computing platforms. These goals are achieved through collaborative activities with the Physics and Engineering Models (PEM), Verification and Validation (V&V), Computational Systems and Software Environment (CSSE) subprograms, and experimental programs in the Office of Experimental Sciences. The IC subprogram sustains activities that enable simulation capabilities to use complex and heterogeneous node architectures of future HPC platforms and benefits from the advances achieved by the Computational Systems and Software Environment (CSSE) subprogram.

Highlights of the FY 2025 Budget

- Provide weapons code capabilities to the NNSA Nuclear Security Enterprise for annual assessments, SFI investigations, LEP qualification and certification, and related nuclear security assessments.
- Port integrated design codes to El Capitan system and ensure code capabilities are available to support Phase 1 assessments.
- Develop additional code capabilities to support critical missions, such as delivery environments, and invest in modern programming models and algorithm development to adapt to future HPC architectures.
- Assess specific mission applications where AI/ML has potential to achieve significant advancements, assess potential of developing cognitive assistants for training new laboratory personnel, and to partner with CSSE on developing infrastructure requirements for targeted investments in AI hardware and new workflows for digital engineering/digital transformation.

FY 2026 – FY 2029 Key Milestones

- Develop and deploy a production-level simulation capability to perform assessments and develop mitigation strategies for hostile encounters.
- Optimize next-generation weapons code technologies on advanced architecture systems, address remaining code performance and portability issues, and improve code usability for critical missions.
- Develop and deploy science-based modeling capabilities to drive efficiency and productivity between the design and production agencies as part of PSI.
- Support digital engineering environment for broader stockpile missions.
- Develop high-fidelity codes to simulate new materials in relevant reentry environments.

FY 2023 Accomplishments

- Maintained full baselines for all stockpile systems and used these baselines to improve the fidelity of annual stockpile assessments.
- Demonstrated readiness of next-generation integrated codes for running on El Capitan when it will be deployed in FY 2024.

- Improved engineering assessment codes to predict reentry environments and response as part of the FY 2023 SCDS *Survivability for Reentry Environments* pegpost.
- Continued to advance nuclear performance assessment codes for boost and secondary performance, safety codes to address multi-point safety issues, and engineering assessment codes for hostile, normal, and abnormal environments.
- Improved code performance, throughput, and usability by optimizing workflows on current NNSA laboratory computing platforms and El Capitan's early access system-3 (EAS-3) nodes in preparation for final system deployment.

Integrated Codes
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Integrated Codes $154,056,000	**Integrated Codes $178,133,000**	**Integrated Codes +$24,077,000**
• Further develop existing and next-generation integrated codes to support stockpile sustainment, for stockpile modernization, including performance in relevant environments, and relevant safety issues. • Develop and deploy simulation tools to be utilized by production agencies. • Support analysts and designers in utilization of the updated integrated design codes. • Port and optimize performance current and next-generation integrated design codes to the El Capitan early access system-3 (EAS-3) nodes and Crossroads Phase 1 system, named Tycho.	• Continue porting and demonstrating performance improvements of a subset of integrated design codes on classified El Capitan and Crossroads systems. • Increase usability of current and next-generation integrated codes for LEPs, design studies, and other national security applications. • Further develop methodologies and code improvements for understanding weapon performance and safety in combined environments with a goal of closing identified gaps. • Support production agencies' use of ASC codes as part of PSI and establish workflows in support of the digital engineering environment.	• Support multiple Phase 1 activities and assessments of future system architectures. • Assess specific mission applications where AI/ML has potential to achieve significant advancements. • Collaborate with CSSE on developing infrastructure requirements for targeted investments in AI hardware and new workflows for digital engineering/digital transformation.

Description

The Physics and Engineering Models (PEM) subprogram provides the models and databases used in simulations supporting the U.S. stockpile. These models and databases describe a wide variety of physical and engineering processes occurring in a nuclear weapon lifecycle. The capability to accurately simulate these processes is required for annual assessment; design, qualification, and certification of warheads undergoing sustainment programs; resolution (and in some cases generation) of SFIs; and the development of future stockpile technologies. The PEM subprogram is closely linked to the Assessment Science program within the SRT&E, which provides the experimental data that informs development of new models used in simulation codes.

The PEM subprogram's responsibilities are threefold: 1) to provide mathematical models and databases to represent physical behavior and physical data (e.g., equation of state (EOS), strength parameters, radiation opacities and nuclear cross-sections) for use in the IDCs; 2) to collaborate with the IC subprogram to implement these models and data in the IDCs; and 3) to collaborate with the Verification & Validation (V&V) subprogram to ensure the models have been implemented correctly (verified) and have been compared to experimental data (validated).

Highlights of the FY 2025 Budget

- Develop models to assess current and future stockpile survivability in hostile environments across current and future high performance computing environments.
- Continue developing and porting foundational materials models and libraries to fully support and utilize next-generation architectures.
- Improve physics models relevant to full range of applications across all weapon systems. This includes improved modeling of multi-physics response to combined abnormal environments, expanding current inline opacity capabilities to support modeling certification efforts and hostile environments, and implementing phase-aware material models for strength and ejecta.
- Develop material response models to inform material development approaches, including high explosives and thermal protection system materials, along with providing quantified uncertainties.
- Further develop and deploy production relevant material models to aid in modeling production processes to optimize production processes at the production agencies.
- Initial development of surrogate physics models using AI to allow for fast evaluation of candidate weapon system designs and material properties.

FY 2026 – FY 2029 Key Milestones

- Deploy physics models and simulation methodologies for evaluation of weapon performance and response in relevant environments.
- Build focused physics simulation capabilities and libraries that take full advantage of advances in next-generation computing architectures and algorithmic advances in heterogeneous computing, quantum computing, neuromorphic computing, and machine learning to provide improved material property and performance assessments. This activity will involve partnering with V&V and CSSE.
- Develop improved age-aware models that enable predictions of current and future stockpile system performance in single and combined environment scenarios and provide initial age-aware physics models to update lifetime assessments in the AAR.
- Incorporate expanded scientific understanding of HE into relevant models to address stockpile-to-target sequences for off-nominal and safety scenarios while bolstering tri-lab cooperation.
- Deploy production simulation capabilities across the NSE, identifying demonstration exemplars within SCDS framework.

FY 2023 Accomplishments

- Delivered opacity tables of relevant materials to be used in sensitivity studies to support the FY 2025 *Advanced Understanding of Primary Performance* pegpost.

- Performed a simulation study of bulk plutonium aging by alpha decay, extending Monte Carlo methods into timescales of years and decades. This study allowed for an analysis and assessment of age-accelerated Pu.
- Improved Pu aging models and evaluations to utilize age-aware models in FY 2025 AAR.
- Delivered an IHE detonation model that accounts for initial conditions, such as density, temperature, and other material characteristics. Model results will be compared with focused and larger experiments to document areas to improve the model.
- Continue to improve modeling of surface defects to further understand impacts of manufacturing on the performance of pits.
- Developed modeling and simulation capabilities to predict reentry environments and response as part of the FY 2023 SCDS *Survivability for Reentry Environments* pegpost. This pegpost performed a virtual flight experiment combining flight dynamics, ablation, thermal response, and random vibration.

Physics and Engineering Models
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Physics and Engineering Models $78,304,000	**Physics and Engineering Models $107,219,000**	**Physics and Engineering Models +$28,915,000**
• Support survivability and hostile environment modeling across current and future HPC systems. • Utilize foundational materials modeling infrastructure to fully support Crossroads and El Capitan, in addition to preparing for other advanced architectures. • Improve and deploy modeling capabilities to positively impact production requirements as part of the Production Simulation Initiative (PSI). • Develop age-aware physics models. • Develop and refine mission-relevant quantum simulation algorithms.	• Develop and refine physics and engineering models, incorporating experimental and test data for validation, to support design studies. • Working alongside the Office of Experimental Sciences to expand scientific understanding and corresponding model development in HE to address STS off-nominal and safety scenarios. • Refine and deploy improved mesoscale models, including age-aware models that enable predictions of current and future stockpile system performance. • Continue deploying modeling capabilities to the production agencies.	• Support for additional PSI projects. • Additional support for new material models to incorporate into the integrated design codes. • Develop physics and engineering model libraries that take full advantage of advances in next generation-computing architectures and algorithmic advances in several new novel computing paradigms such as quantum and neuromorphic computing. • Initial development of surrogate physics models using AI to allow for fast evaluation of candidate weapon system designs and material properties.

Advanced Simulation and Computing
Verification and Validation

Description

The Verification and Validation (V&V) subprogram provides soundness in integrated simulation capabilities by collecting evidence that the numerical methods and simulation models are being solved precisely, and that the simulation results from mathematical and computational models implemented into the codes are in sync with real-world observations. . The V&V subprogram funds the critical skills needed to apply systematic measurement, documentation, and demonstration of the ability of the models and codes to predict physical behavior.

V&V brings the IC and PEM subprograms together with other SRT&E activities to evaluate the capability of the IDCs. Verification activities demonstrate that the IDCs and PEM models are correctly solving their respective governing equations. Validation activities ensure that both science and integrated design codes are solving the equations accurately, and that the models themselves are sufficiently precise for the intended application. Together, these subprogram activities provide a technically rigorous, credible, and sensible foundation for computational science and engineering calculations by developing, exercising, and implementing tools that provide confidence in the simulations of nuclear stockpile problems.

Highlights of the FY 2025 Budget

- Improve necessary next-generation verification and validation techniques to continue support in methods, assessments, and data archiving.
- Continue extending the verification and validation infrastructure to include next-generation integrated design codes.
- Support advancement of V&V and Uncertainty Quantification (UQ) suites to support the current stockpile integration of common modeling workflows.
- Integrate test suites into existing workflows for supporting a broad customer base.
- Demonstrate improved and validated nuclear data from machine learning techniques to incorporate into material response and plasma models.
- Strengthen verification and validation techniques utilized for 3D studies of aging stockpile and for new design optimization aided by AI/ML and UQ.
- Enhance physics and engineering common model frameworks to align with common modeling techniques for ASC capabilities.

FY 2026 – FY 2029 Key Milestones

- Utilize capabilities to evaluate fidelity of the simulation tools in collaboration with integrated codes, model development, and weapon application communities.
- Support responsive deterrent capabilities through predictive models, experimental collaborations and integrated V&V/UQ processes.
- Collaborate with PEM to support the development of credible and interpretable machine learning toolkits to enable physics-constrained ML models with quantifiable uncertainties and holistic data assessments.
- Incorporate AI/ML methods that enable agile predictions suitable for stockpile applications.
- Develop V&V/UQ methods for AI/ML workflows supporting manufacturing, numerical meshing, and test suites.
- Establish a V&V/UQ framework and workflows to support the credible application of next-generation codes on current and emerging platforms.
- Enhance provision of tools and methodologies for estimating the uncertainty in weapon simulation results from the IDCs.

FY 2023 Accomplishments

- Completed progress towards uncertainty quantification (UQ), sensitivity, and code verification studies using one-way capability.
- Improved V&V suites with progress on adding models of modern AGEX and subcritical experiments in a way that unifies respective workflows.
- Identified W93 exemplar problems to test workflow implementations and Digital Engineering Ecosystem (DEE) integration.

- Completed high-fidelity, digital wind tunnel simulations of hypersonic flow using direct numerical simulation techniques.
- Tested models that were implemented in the appropriate Common Modeling Framework (CMF) authority for assessment of capabilities for modeling the strength and EOS of aging materials.
- Developed workflow for machine learning analysis of new training dataset and trained new networks on reduced analysis of radiographic images to infer performance quantities.
- Completed development of new workflow for uncertainty quantification, and solution verification to quantify and compare several sources of uncertainty in coupled aerothermal analysis.

Verification and Validation
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Verification and Validation $59,878,000	**Verification and Validation $72,984,000**	**Verification and Validation +$13,106,000**
• Improve necessary next-generation verification and validation techniques to continue support for methods, assessments, and data archiving. • Enhance V&V protocols for algorithms running on advanced HPC architectures. • Develop infrastructure for common modeling frameworks to support ASC capabilities. • Develop and provide training on the use of new and existing UQ tools. • Implement quality assurance controls to ensure material and nuclear databases are correctly updated and maintained. • Evaluate and refine the primary and secondary common models.	• Extend V&V and UQ frameworks to support next-generation codes on current and emerging platforms. • Support training on UQ tools aided by advanced machine learning algorithms and techniques. • Enhance physics and engineering Common Model Frameworks to align with common modeling techniques for ASC capabilities. • Continue integrating test suites into existing workflows for supporting a broad customer base.	• Additional support for Large-Scale Calculations Initiative and enhancement of Common Model Frameworks relevant to physics and engineering. • Integrate experimental data in to enhanced V&V/UQ workflows for predictive models, ensuring credibly in rapid turnarounds for simulation results • Develop credible and interpretable machine learning tools via physics-constrained ML models with quantified uncertainties and holistic data assessments.

Advanced Simulation and Computing
Computational Systems and Software Environment

Description

The Computational Systems and Software Environment (CSSE) subprogram supports a portfolio of integrated, balanced, and scalable computational capabilities to provide NNSA's IDCs with a stable computing environment. In addition to the powerful Commodity Technology (CT), Advanced Technology (AT), and Advanced Architecture Prototype (AAP) systems that the program fields, the supporting software infrastructure that is deployed on these platforms includes many critical components. These include system software, input/output (I/O) services, storage and networking, post-processing (visualization and data analysis tools), and next-generation computing technologies. CSSE also examines and develops possible future technologies beyond exascale, such as quantum, neuromorphic, artificial intelligence, and reconfigurable computing components.

The CSSE subprogram provides the computational infrastructure, both hardware and software, necessary to support weapon applications, as follows:

- Design, develop, and deploy usable computing systems. The CSSE subprogram will design and procure HPC systems required to support stockpile stewardship and broader nuclear security missions. These systems will include testbeds, prototypes and early-access systems for evaluation and analysis of code performance issues on next-generation hardware, CT systems for most stockpile computing work, and AT systems for large-scale simulation workloads and predictive science advancements.
- Provide comprehensive, stable computing and development environments across the national security laboratories. The CSSE subprogram will also provide the system software and user environments necessary for code development and simulation using the computing hardware.

ASC will utilize lease-to-purchase contracts (also referred to as lease-to-own (LTO) agreements) for Commodity Technology and Advanced Technology Systems, visualization cluster, storage systems, and other High Performance Computing platform procurements when such contracts are found to provide the best programmatic and financial value to the government.

Highlights of the FY 2025 Budget

- Execute classified modeling and simulation campaigns on the ATS-3/Crossroads system.
- Transition the ATS-4/El-Capitan exascale system into classified production service.
- Optimize high-efficiency, scalable, exascale-class software technologies for production ATS and CTS user environments.
- Deploy the at-scale AAPS-2/Vanguard-II architecture prototype system at SNL.
- Complete negotiation and contracting for the ATS-5 system due to be deployed at LANL in FY27.
- Deploy open-source and proprietary Large Language Models (LLM) in the unclassified and classified networks to support AI model evaluation and development activities.
- Deploy initial AI/ML optimized resources and supporting data infrastructure in the unclassified and classified networks.
- Conduct a survey of technologies for a future CTS-3 procurement of systems to be deployed at LLNL, LANL, SNL, and other NNSA sites.

FY 2026 – FY 2029 Key Milestones

- Execute and complete the Advanced Memory Technology R&D program.
- Deploy and transition ATS-5 system at LANL to classified computing service.
- Deploy CTS-3 systems at LLNL, LANL and Sandia supporting unclassified and classified weapons science.
- Initiate and complete the ATS-6 procurement for a future classified computing resource to be deployed at LLNL.
- Initiate technology evaluation activities for a future AAPS-3/Vanguard-III system to be deployed at SNL.
- Deploy large-scale AI/ML computing resources and supporting data infrastructure in unclassified and classified environments.
- Deploy an optimized and scalable AI/ML software environment for science and engineering.
- Optimize and extend exascale-class software technology environment for next generation of ATS and CTS platforms.

FY 2023 Accomplishments

- Deployed ATS-3/Crossroads system at LANL and completed system integration.
- Developed prototype exascale software environments for ATS-3/Crossroads and ATS-4/El Capitan Early Access Systems in collaboration with vendors and ECP partners.
- Deployed management infrastructure for ATS-4/El Capitan system at LLNL.
- Completed contract for the AAPS-2/Vanguard-II system and prototype accelerator components for deployment at Sandia in FY 2025.
- Awarded contracts for Advanced Memory Technology R&D portfolio.

Computational Systems and Software Environment
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Computational Systems and Software Environment $289,623,000	**Computational Systems and Software Environment $286,102,000**	**Computational Systems and Software Environment -$3,521,000**
• Deploy and complete acceptance of the ASC ATS-3/Crossroads system at LANL. • Deploy initial hardware deliveries of the ASC ATS-4/El Capitan system at LLNL. • Deploy CTS-2 platforms at the NNSA laboratories and in support of the KCNSC. • Manage the advanced memory technology and next-generation high-performance networking R&D contracts. • Continue evaluation of quantum, AI/ML and neuromorphic technologies for DP and national security missions. • Issue and complete review of an RFP for the system integrator for SNL AAPS-2/Vanguard-II platform.	• Execute tri-lab classified modeling and simulation campaigns on the ATS-3/Crossroads system. • Transition the ATS-4/El-Capitan system to classified production service. • Complete negotiation and contracting for the ATS-5 system for deployment at LANL in FY 2027. • Deploy an at-scale AAPS-2/Vanguard-II prototype system at SNL. • Deploy an optimized, scalable software environment for ATS-3/Crossroads and ATS-4/El Capitan platforms. • Deploy open-source and proprietary Large Language Models (LLM) in the unclassified and classified networks to support model evaluation and development activities. • Deploy initial AI/ML-optimized resources and supporting data infrastructure in the unclassified and classified networks. • Conduct a market survey of technologies for a future CTS-3 procurement of systems to be deployed at LLNL, LANL, SNL and other NNSA sites.	• Planned decrease due to ATS-4/El Capitan deployment. • AMT R&D contracts spreading over multiple years to meet R&D timelines and projected funding profile.

Advanced Simulation and Computing
Facility Operations and User Support

Description

The Facility Operations and User Support (FOUS) subprogram provides the facilities and services required to support nuclear weapons simulation workloads. Facility Operations includes physical space, power, and other utility infrastructure, and Local Area/Wide Area Networking for local and remote access, as well as system administration, cybersecurity, and operations services for ongoing support. User Support includes computer center hotline and help-desk services, account management, web-based system documentation, system status information tools, user training, trouble-ticketing systems, common computing environment, and application analyst support.

The FOUS subprogram is responsible for management of the computer operations and maintenance and for system administration and user support. This includes:

- Effective management of computing hardware infrastructure. The FOUS subprogram will provide adequate power, cooling, and integrated facilities to support the computing system hardware, and it will provide the requisite networking and storage infrastructure.
- Responsive system administration, maintenance, and user support. The FOUS subprogram will administer the computational systems, manage the job scheduling capability, and provide responsive support to the user community.

ASC will utilize lease-to-purchase contracts (also referred to as lease-to-own (LTO) agreements) for Commodity Technology and Advanced Technology Systems, visualization clusters, storage systems, and other High Performance Computing platform procurements when such contracts are found to provide the best programmatic and financial value to the government.

Highlights of the FY 2025 Budget

- Prepare the ASC computing facilities at the NNSA laboratories for the next-generation platforms.
- Operate CTS-2 platforms at the NNSA laboratories.
- Operate ATS-3/Crossroads at LANL and ATS-4/El Capitan at LLNL, including remote computing capabilities.
- Integrate El Capitan (ATS-4) into tri-lab classified computing environment.
- Begin design of power and cooling improvement/modification minor construction projects at B453 and B451 at LLNL.
- Begin ATS-2/Sierra retirement design.
- Deploy and provide user support for additional AI testbeds and large-scale compute resources, in addition to new data management and storage services, on unclassified and classified networks to support new machine learning activities.

FY 2026 – FY 2029 Key Milestones

- Complete design and construction of the ATS-5 installation project.
- Complete the Strategic Computing Complex (SCC) Electrical Upgrade minor construction project, which will expand the warm-water cooling system and electrical capacity at the SCC to enable up to 50MW of supercomputing.
- Maintain continuous operation and usage of ATS-3/Crossroads and ATS-4/El Capitan.
- Operate ATS-4/El Capitan, and install, integrate, and operate ATS-5 system, CTS-3 systems, and Application Readiness Testbeds (ART).
- Operate the Vanguard-2 platform as a tri-lab, production-level HPC system.
- Complete B453 and B451 power and cooling improvement/modification minor construction projects at LLNL.
- Design and start ATS-6 installation project at LLNL.
- Deploy and provide user services for AI testbeds and systems to support AI4ND program.

FY 2023 Accomplishments

- Completed the ATS-4/El Capitan site infrastructure project to provide electrical, mechanical, and structural modification required to install the system at LLNL.
- Deployed significant portions of the ATS-4/El Capitan system including all system infrastructure racks and the capacity tier at LLNL.

- Completed TOSS 3 to TOSS 4 conversions across the entire unclassified environment and began TOSS 4 conversations of major systems in the classified computing environment at LLNL.
- Completed the design and procurement of long-lead infrastructure for the SCC Electrical Upgrade minor construction project in preparation for ATS-5 at LANL.
- Deployed to production a fully designed, i.e., including redundant capability, and senary-way operational 100 Gbps DisCom (ASC-funded classified compute) network to the four tri-lab sites (LLNL; LANL; SNL, CA; SNL, NM) representing a 10-fold increase in bandwidth on this data transfer and visualization backbone.
- Installed ATS-3 Crossroads and CTS-2 system hardware at LANL.
- Started 4MW power minor construction project to 725E data center at SNL.
- Completed power and cooling site preparation for CTS-2 system at SNL.

Facility Operations and User Support
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Facility Operations and User Support **$196,139,000**	**Facility Operations and User Support** **$215,062,000**	**Facility Operations and User Support** **+$18,923,000**
• Maintain full operation of CTS-2 systems. • Maintain maximum availability of compute cycles to end users. • Document and implement new best practices. • Provide operational support for reliable and secure production computing environment. • Prepare for insertion of next-generation architectures (systems and testbeds). • Implement contingency response plans, as necessary. • Complete installation and deployment of ATS-3/Crossroads. • Complete required building preparation for ATS-4/El Capitan. • Support the installation of ATS-4/El Capitan. • Continue design and construction of additional power and cooling upgrades for SNL's 725-E Data Center. • Continue to improve tri-lab common computing environment to include more heterogeneous architectures in the CTS environment.	• Maintain full operation of CTS-2 systems. • Maintain maximum availability of compute cycles to end users. • Document and implement new best practices. • Provide operational support for reliable and secure production computing environment. • Prepare for insertion of next-generation architectures (systems and testbeds). • Implement contingency response plans, as necessary. • Continue to improve tri-lab common computing environment to include more heterogeneous architectures in the CTS environment. • Complete the 725-E Data Center Cooling Capacity Expansion minor construction project. • Begin design of power and cooling improvement/modification minor construction projects for B451 and B453 at LLNL. • Begin ATS-2/Sierra retirement.	• Operation of El Capitan, Vanguard-II, and CTS-2 platforms in full production service mode. • Upgrades in remote computing capabilities and facility preparation (including minor construction projects) for future HPC system and AI testbed installations, while maintaining operations across tri-lab computing infrastructure. • Additional testbeds and data network and storage required to support the AI4ND initiative. • Increased storage infrastructure requirements driven by exascale computing and AI4ND activities.

Advanced Simulation and Computing
Capabilities for Nuclear Intelligence

Description

The Capabilities for Nuclear Intelligence (CNI) subprogram advances and adapts SRT&E capabilities developed for the weapons program to serve the needs of the intelligence community in assessing foreign nuclear weapon activities. CNI focuses on activities related to non-stockpile weapons training, high explosive knowledge development, weapon modeling advancements and computational platforms, weaponization studies, and experimental capabilities and assessments.

CNI scope has historically been funded across Primary Assessment Technologies and Archiving and Support. In FY 2025, the funding for this work scope will be consolidated into a new subprogram under Advanced Simulation and Computing.

Highlights of the FY 2025 Budget

- Complete CNI Practicum 8, a design study that challenges early- to mid-career U.S. nuclear designers and engineers to develop an understanding and appreciation for non-stockpile-like nuclear design space.
- Continue porting relevant modeling/simulation tools to global security computing platforms.
- Complete testing series on proliferant-relevant design.
- Initial efforts to evaluate open-source AI models and their application to global security missions.

FY 2026 – FY 2029 Key Milestones

- In coordination with the intelligence community, conduct Practicum 9 and 10 to provide valuable design experience.
- Identify and prioritize technical gaps to enable the most critical assessments.

FY 2023 Accomplishments

- Completed CNI Practicum 7 jointly with the United Kingdom's Atomic Weapons Establishment.
- Completed an HE test series to characterize HE-relevant to the intelligence community and other global security partners.
- Expanded modeling validation suites to capture relevant designs.

Capabilities for Nuclear Intelligence
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Capabilities for Nuclear Intelligence **$0**	**Capabilities for Nuclear Intelligence** **$20,000,000**	**Capabilities for Nuclear Intelligence** **+$20,000,000**
• $5,000,000 has been funded from Archiving and support, $15,000,000 from Primary Assessment Technologies.	• Complete practicum 8 design exercise. • Complete Thermal Protection System (TPS) roadmap activities. • Develop experimental series to test and characterize HE formulations of interest.	• Reflects the transfer of $5M from Engineering and Integrated Assessments for CNI. • Reflects the transfer of $15M from Primary Assessment for CNI.

Stockpile Research, Technology, and Engineering
Weapon Technology and Manufacturing Maturation

Overview
The Weapon Technology and Manufacturing Maturation program develops agile, affordable, assured, and responsive technologies and capabilities for nuclear stockpile sustainment and modernization.

The core areas of work include:
- **Agile, Assured, and Affordable Technologies:** Developing and modernizing stockpile technologies and processes so the techniques are agile, assured, and responsive to change, shortening design, qualification, certification, and manufacturing cycles and timelines to improve future affordability.
- **Partnership with Stakeholders to Meet Stockpile and Customer Requirements:** Identifying, sustaining, enhancing, integrating, and continually exercising all capabilities, tools, and technologies across the science, engineering, design, certification, and manufacturing cycle, working together with the Department of Defense, national security laboratories, nuclear weapon production facilities, and other partners.
- **Qualification and Certification:** Collaborating with other Defense Programs partners to conduct experiments and simulations that enable qualification and certification without nuclear explosive testing.
- **Skilled Technical Workforce and Enhanced Capabilities:** Maintaining a qualified technical workforce and enhanced capabilities by transferring knowledge, skills, and direct experience with respect to all stockpile technologies and processes.

Primary responsibilities of this program include:
- Developing innovative technologies that both minimize the probability of unauthorized use and maximize reliability for authorized use of nuclear weapons.
- Leading technology and system demonstration efforts, with various mission partners, to speed development and improve acceptance of advanced technologies and processes into the stockpile and the Nuclear Security Enterprise.
- Improving agility, effectiveness, safety, and efficiency in the design and manufacture of war reserve components using advanced technologies and manufacturing processes.

The Weapon Technology and Manufacturing Maturation program is made up of three subprograms:
1. **Surety Technologies** creates and matures options, internal and/or external to the warhead, to minimize the potential for deliberate unauthorized use, or denial of authorized use, of a U.S. nuclear weapon while maximizing the reliability of authorized use of a U.S. nuclear weapon and maintaining the highest levels of safety.
2. **Weapon Technology Development** funds activities associated with the development, engineering, and integration of technologies that ensure the reliable performance, safety, and handling of current and future stockpile systems. Technology demonstrations and related activities are also covered under this subprogram.
3. **Advanced Manufacturing Development** rapidly develops and deploys advanced manufacturing methodologies and processes that are responsive to the NNSA mission.

Weapon Technology and Manufacturing Maturation
Surety Technologies

Description

Surety Technologies creates, develops, and matures advanced safety, security, and use-control or denial technologies to minimize the probability of an accidental nuclear explosion and, in the unlikely event that security fails, and unauthorized access is gained reduces the risk of an unauthorized nuclear yield to the lowest practical level.

Surety Technologies seeks advances in leading-edge technologies in two timeframes:

- Maturing near-term surety concepts and technologies to offer the most effective surety solutions for the enduring stockpile and future insertion opportunities.
- Creating and evolving highly advanced surety technologies, independent of specific weapon types or insertion opportunities that can result in major surety improvements.

Surety Technologies incorporates national security guidance as outlined in the Presidential Policy Directive (PPD)–35; Department of Energy Order 452.1E, *Nuclear Explosive and Weapon Surety Program* and its new surety requirements; the NNSA Defense Programs surety strategy; and the 2010 JASON Surety Study findings and recommendations; in conjunction with the Joint Integrated Lifecycle Surety risk assessment capability to identify the most cost-effective surety technologies. This enables program and weapon system managers to make better-informed implementation decisions on stockpile surety improvement options.

Surety Technologies activities include:

Major Projects – Directed, high priority, and integrated research and development (R&D) efforts to support timely availability of advanced safety and security options for the stockpile. These are projects, usually multi-site, that are easily defined and required to integrate with entities outside the Surety Technologies program. They also have defined requirements for technology development and are held to integrated schedules. Major Projects represent a concerted effort by the Surety Technologies program to ensure novel technologies are properly integrated with and across programs and sites, leading to a high probability of achieving sufficient maturity for stockpile insertion.

Technology Development – Advanced safety and security projects meant to advance the state of the art and to improve the building blocks of the Surety Technologies program. These efforts are technology-focused and are not held to a development schedule but to an integrated schedule or to commitments with outside entities. Technology Development projects form the base from which Major Projects draws to create new, integrated technologies for the stockpile.

Architecture Development and Integration – Activities related to the state-of-the-art technology reviews for weapon applications as well as proposal for new subsystem architecture utilizing features from the technology development framework.

Program Management – Activities related to administrative and program management costs to ensure project solvency based on priorities and emerging challenges.

Highlights of the FY 2025 Budget

- Test and evaluate optical initiation fire sets and support the collaborative effort between the laboratories and plants created to ensure the successful rapid maturation of optical initiation fire sets as that technology eventually transitions to production and insertion into future weapon systems.
- Continue development of advanced safety mechanisms and demonstrate technologies on the next appropriate demonstrator.
- Integrate novel technologies into safety architectures that minimize/eliminate issues with inadvertent electrical transmission.
- Construct prototype power management technologies tailored to modernized applications.
- Continue to mature quantum computer resistant codes and weapon architecture for future insertion opportunities.
- Develop graded surety architecture suites to address emergent needs of the stockpile.

FY 2026 – FY 2029 Key Milestones

- Continue development of improved power management technologies tailored to modernized applications.
- Deploy advanced safety mechanisms and demonstrate technologies on a relevant demonstrator.
- Build proof-of-concept demonstrators of improved safety architectures that minimize/eliminate issues with inadvertent electrical transmission.
- Demonstrate a weapon architecture for future insertion that demonstrates resistance to quantum computer code driven challenges.
- Construct novel surety architectures test articles to address emergent needs.

FY 2023 Accomplishments

- Completed the integration of the requisite hardware for a full-scale demonstration of the optical initiation system on a ground-based demonstration with full functionality.
- Stood up advanced manufacturing capabilities in support of Next Gen development.
- Provided surety related support to the U.S.-UK Joint Technology Demonstrator project for their ground test unit.
- Completed preliminary studies of current iteration Multipoint Safety (MPS) concepts technologies compatibility.
- Completed a tri-lab surety roadmap sufficient to accomplish the surety requirements in the new DOE Order 452.1E.
- Integrated specialized memory chipsets into a use-control design concept that will allow for unique control concepts. Advanced Optical Initiation to TRL 5/MRL 3. It is ready for a program of record to select it for insertion. This met a key milestone and the TRT can be closed out. KCNSC has built all the hardware for the OI system.
- A fuel cell was integrated into the Responsive Development Experiment (ReDX) 2B flight test funded by SRP. The fuel cell performed exactly as expected and was the first demonstration in a flight environment. It even kept working after the rocket crashed in the desert!
- Demonstrated an increase in the manufacturability of Pioneering Value Optimized Thermoelectric (PIVOT). Manufactured six PIVOT Radioisotope Thermoelectric Generator (RTG) prototypes lending to a threefold increase in test units. PNNL is advancing the extrusion of the Bismuth Telluride power conversion material.
- The LLNL OI all IHE system team has worked to integrate the technology into a flight test demonstrator.
- Progress was made on crypto-technologies that are resistant to quantum computer decrypting. DOD partners remain actively engaged supporting NNSA's cryptography portfolio which includes hardware and code development. From a weapon program perspective, some of this work has pathways of interest to future systems that will offer them just-in-time security against advanced technological and cyber threats.
- Sandia championed FS3, a novel method of incorporating threats to various weapon venues and actively engaged other labs to bring them on board.
- SRS continued to take data on the tritium release from test units to improve predictive models.

Surety Technologies
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Surety Technologies $50,617,000	**Surety Technologies $11,542,000**	**Surety Technologies -$39,075,000**
• Develop certain surety options for future weapons systems, in accordance with the tri-lab surety roadmap, to meet threshold and objective surety requirements as defined in DOE Order 452.1E. • Establish TRL 5 and MRL 3 for the optical initiation system intended for insertion into the next available warhead. • Continue support to the Optical Initiation Technology Realization Team. • Continue to develop advanced safety mechanisms and demonstrate technologies on the next demonstrator. • Continue to develop improved safety architectures that minimize/eliminate issues with inadvertent electrical transmission. • Develop a down-selected set of power management technologies tailored to modernized applications. • Mature to TRL 5 and MRL 3 an all-electrical firing set as a backup to optical initiation technology.	• Mature Pioneering Value Optimized Thermoelectric (PIVOT) power supply technology to TRL 5 and MRL 3. • Mature Optical Initiation for Insensitive High Explosives. • Mature quantum computer resistant codes and weapon architecture for future insertion opportunities.	• Represents prioritization of resources towards higher priority programmatic efforts. Essential weapons use control and security technologies will be funded. Current safety systems and programmatic controls will also be maintained. Current weapon deployment postures will be strictly upheld.

Weapon Technology and Manufacturing Maturation
Weapon Technology Development

Description

Weapon Technology Development (WTD) develops technology insertion options that are responsive to changing global security environments. The focus of WTD is to improve existing capabilities, provide solutions for addressing capability gaps and shortfalls, evolve capabilities to meet emerging threats and changing policy, and utilize improved technologies and methods to reduce development times and lifecycle costs.

WTD funds activities for the research, development, engineering, integration, and demonstration of technologies that enable the performance, reliability, safety, and responsiveness of current and future stockpile. This includes early-stage development and testing of weapon components targeted to replace sunset technologies and modernize subsystems. This is defined as components facing performance, aging, and/or security issues that can have negative impacts on the performance and safety of a weapon.

Highlights of the FY 2025 Budget

- Continue development of strategic radiation hardened microelectronics, neutron generator (NG) technologies, gas transfer system designs, Nuclear Explosive Package (NEP) replacement materials, and arming/fuzing/firing component improvements.
- Develop the Synthetic Aperture Multitarget Simulator (SAMuS) and Advanced Radar Target Simulator.
- Synthesize a binder replacement for PBX 9502 due to supply chain issues with perfluoroalkyl substances (PFAS) materials.
- Mature strategically radiation hardened magneto-resistive random-access memory (MRAM).
- Adapt new passivation techniques and testing of tritium storage vessels to sidestep supply chain shortages of current components.
- Execute collaborations with the UK on Allied Exploratory Concepts (AEC) as a strategic collaboration focusing on new technologies outside the programs of record.
- Collaborate with Navy Strategic Systems Programs (SSP) partners and others on future flight opportunities in relevant environments for the Reentry Experiments Development Initiative (REDI).
- Continue support for Air Force-focused demonstrator programs to mature technologies for future Air Force systems.

FY 2026 – FY 2029 Key Milestones

- Development and transition of novel conventional and insensitive high explosive (HE) formulations with attractive performance characteristics to the next programs of record.
- Adapt weapon components to use alternative materials to the materials currently in use that are being phased out due to obsolescence, environmental hazards, and/or changes in weapon mission-space.
- Complete 2-3 R&D technology development sprints in collaboration with the UK under the Allied Exploratory Concepts (AEC) project.
- Development of strategic radiation hardened 180 nm microelectronic transistor technology and its associated products, e.g. Application Specific Integrated Circuit (ASIC), Field Programmable Gate Array (FPGA), Static-access Random Access Memory (SRAM), and System on Chip (SoC) microcontrollers.
- Development of Gas Transfer Systems (GTS), Neutron Generators (NG), batteries, and arming/fuzing/firing components that have improved Size, Weight, and Power (SWaP).
- Investigation and investment in exploratory R&D and technology development options for future Programs of Record.
- Collaborate with Navy SSP partners and others to field the Reentry Experiments Development Initiative (REDI) flight(s).
- Collaborate with the Air Force on demonstrator programs to mature technologies for future Air Force systems.
- Support the development of technologies for possible application to the SLCM-N.

FY 2023 Accomplishments

- Met requirements for Enzo demonstrator to ship and meet the flight date of 3QFY2024.
- Documented the results of Ground Test 4 (GT4) and communicated the findings to the Joint Management Group of the JTD Collaboration.
- Implemented characterization testing as part of the Front-End Assurance (FEA) framework of the Electronic Parts Program (EPP).
- Developed an initial plan to achieve Distributed Bus Based Architecture (DBBA) production at KCNSC.
- Completed testing of a Foundation Bus through body cable design at the Saturn Radiation Test facility.
- Completed two Rabbit Hydrotests.
- Advanced a novel DAAF-based insensitive explosive, PBX9505 (LAX 133.5), to TRL 5.

Weapon Technology Development
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Weapon Technology Development $128,547,000	**Weapon Technology Development $145,833,000**	**Weapon Technology Development +$17,286,000**
• Continue development of modular and adaptable architectures with enhanced capabilities that can respond quickly and easily to changing policy, technology, and threat environments. • Continue development of a distributed bus-based architecture (DBBA) to enable greater system reliability and component re-use across the stockpile. • Develop field programmable gate arrays and radiation hardened microelectronics used to provide arming, fuzing, firing, and other functions within nuclear weapons. • Advance development of long-life GTS design options. • Continue R&D of next-generation components and materials required to ensure safety, security, reliability, and performance of aging Nuclear Explosive Packages. • Pursue development and testing of advanced thermal batteries, launch accelerometers, and replacement inertial sensor technologies. • Advance electronic neutron generator (ELNG) for future system insertion to enable reduced costs. • Continue development positional aware fuzing. • Maintain efforts with the UK on JTD as a strategic collaboration focusing on design and development of responsive technologies. • Pursue further collaboration with Navy Strategic Systems Programs (SSP) partners and others on future flight opportunities in realistic environments for the Reentry Experiments Development Initiative (REDI). • Continue collaboration with the Air Force on the Corvus integrated demonstrator.	• Mature responsive and agile sub-system and component technologies for insertion into future stockpile systems including support of W93 program on/off ramp teams (PORTs). • Improve existing capabilities, provide solutions for addressing capability gaps and shortfalls, evolve capabilities to meet emerging threats and changing policy, and use improved technologies and methods to reduce lifecycle costs. • Develop a distributed bus-based architecture (DBBA) that enables high reliability communication and power distribution resulting in greater system flexibility, short development times, and component re-use across the stockpile. The future looking DBBA activities will be updated based on future system context. • Continue development of field programmable gate arrays and radiation hardened microelectronics used to provide arming, fuzing, firing, and other functions within nuclear weapons. • Mature advanced energetics technologies to support future weapon system insertions, including mature explosive materials, initiation systems, and detonators technologies. • Develop and improve neutron generator and gas transfer system technologies to offset aging effects and reduce weight.	• Continue to fund and support component development that falls under the program on/off ramp team (PORT) construct. • Additional scope in robust development of microelectronics including CMOS8 that enables field–programmable gate arrays, processing systems on a chip, robust non-volatile memories, faster processing, and reduced power consumption. • Continued leveraging of system demonstrators to mature novel innovations across the technology maturation portfolio and foster collaboration between DOE and DOD in technology maturation for the future stockpile. • Boost development of innovative weapons components, materials, capabilities, processes, and architectures to enable a more agile, less costly, and streamlined nuclear complex able to address emerging global security environments. • Maturation of the Distributed Bus-Based Architecture increasing agility, reliability, and flexibility in future components and future weapon systems and a reduction in development and qualification times.

Weapon Technology and Manufacturing Maturation
Advanced Manufacturing Development

Description

The mission of the Advanced Manufacturing Development (AMD) program is to rapidly develop and deploy advanced manufacturing solutions to existing problems and have manufacturing technologies and capabilities to rapidly recover from unforeseen problems. AMD directly benefits the future agility and responsiveness of the National Nuclear Security Administration's manufacturing infrastructure by providing capable, efficient, and effective manufacturing solutions to address technical issues, replace obsolete materials or processes, and anticipate solutions to future challenges.

In pursuing the long-term advanced manufacturing strategy, this program prioritizes developing improvements that demonstrate viability for a particular application, which allows future weapon modernization efforts to incorporate those production methods with confidence to meet program requirements, costs, and schedule. The new production processes that AMD identifies and opts to mature can improve component performance, shorten production schedules, and design cycles, reduce facility footprint, avoid compliance issues, provide risk mitigation, and lower life-cycle costs. The AMD program maintains awareness of emerging manufacturing technologies, assessing and tailoring new manufacturing processes emerging from the industrial and academic sectors to the unique materials and qualification standards required for nuclear weapons.

Highlights of the FY 2025 Budget

- Leverage additive manufacturing and other fabrication processes to continue implementation of a digital transformation in the design and development of components, tools, and fixtures.
- Develop increased understanding of in-situ process monitoring to move closer to "born qualified" component manufacturing capabilities with additive manufacturing processes i.e., a successful print yields a QA-approved part.
- Enhance the development of additively manufactured high explosives for multiple component development as an alternative to obsolete and at-risk material technologies (e.g. PFAS binders).
- Increase producibility rating on next-gen strategic rad-hard complementary metal oxide semiconductor (CMOS8) products development and yield through process improvements.
- Strengthen predictive simulation and data analytics capabilities for manufacturing processes, substantially augmenting the enterprise's capabilities to rapidly mature novel manufacturing processes and produce acceptable stockpile components.
- Transition technologies that conserve or reclaim at-risk materials, replace obsolete materials, and/or create new materials and chemicals that support stockpile stewardship.
- Finalize transition of additive manufacturing (Direct Ink Write) technologies for pads and cushions to modernization programs, support novel developments in pad and cushion technology, including on-machine inspection.
- Transition coating technologies able to meet stockpile requirements to modernization programs.

FY 2026 – FY 2029 Key Milestones

- Invest in the accelerated adoption of promising transformational manufacturing materials, processes, and capabilities to build a resilient and efficient enterprise.
- Transition methods improving existing manufacturing technologies to production modernization to eliminate component manufacturing risk before stockpile insertion.
- Develop and demonstrate various techniques and approaches for cost effective rapid prototyping in support of both basic research and development and stockpile systems programs.
- Advance additive capabilities for a broad spectrum of components while also developing a fundamental understanding of the differences between legacy materials and additive materials to broaden the application of additive manufacturing across the enterprise.
- Transition next-generation radiation-hardened complementary metal oxide semiconduction (CMOS8) manufacturing processes to modernization programs for insertion of application-specific products.
- Transition additive manufacturing for thermosets enabling added design flexibility for low-cost light weight structural components.
- Establish the readiness to use additive manufacturing for a range of metal components in the stockpile.

- Develop paths to certification and qualification for new components and materials produced via advanced and novel manufacturing techniques.
- Further develop, scale-up, and demonstrate additive manufacturing and particle injection molding of high explosives which may offer advantages in component performance and efficiencies in manufacturing compared to legacy manufacturing processes.
- Transition coating technologies, able to meet stockpile requirements, to modernization programs.
- Capitalize on in-situ diagnostic data and on-machine inspection for feedback into manufacturing processes (initially additive manufacturing of pad and cushions) as a means of faster acceptance and component qualification.
- Transition a complete system for cable connector specification to modernization programs to increase efficiencies over current cable connector design to manufacturing timescales.
- Transition technologies for conserving at-risk materials and replacing obsolete materials.
- Transition near net shaping capability of lithium components forming to increase material efficiency and stretch the available inventory.
- Expand the capabilities of manufacturing with the smart application of digital technology to deliver value on the production processes.
- Support the continued development of GTS related processes from cradle to retirement of these unique systems that enables the reuse of key materials and reduces waste streams.

FY 2023 Accomplishments

- Deployed of metal additive manufacturing process improvements to create production efficiencies that reduce labor costs, and improve machine safety, reliability, and performance.
- Matured CMOS8 production capability to complete the first Flip Flop yield learning and TCV4 (Technology Characterization Vehicle) lots.
- Devised a pilot-ready process for recovery of precious materials from used GTS containers.
- Advanced additive manufacturing techniques for high explosives that will enable formulations that are safer to produce and replace legacy materials that are no longer commercially available.
- Demonstrated Intelligent Feed Forward manufacturing techniques for a variety of machines, metal, and geometries.
- Integrated in-situ monitoring capabilities with DIW (Direct Ink Write) printing to accelerate process maturation.
- Advanced near net shaping forming technology of lithium component forming to increase material efficiency and stretch the available inventory.
- Applied machine learning models to identify replacement candidate polymers for At Risk Materials.
- Developed new measurement methods which will enable high-throughput data acquisition for polymers.
- Optimized composition and mechanical properties of Multi-Phase Multicomponent Alloys (HEAs) through characterization of dual-phase microstructures to synthesize, characterize, and test to validate calculations to inform computational design.
- Completed an initial model of the Diamond-Like Carbon (DLC) coating production chamber to enable future process development improvements.
- Matured cold spray processes sufficiently to create full scale mock components.

Advanced Manufacturing Development
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Advanced Manufacturing Development **$107,001,000**	**Advanced Manufacturing Development** **$129,114,000**	**Advanced Manufacturing Development** **+$22,113,000**
• Advance certification and qualification methods, like integrated computational materials engineering and in-situ diagnostics, to widen the use of AM-produced parts in the active stockpile. • Improve confidence in next-gen digital manufacturing through use of computational simulations and model-based designs. • Advance manufacturing readiness level of new strategically radiation-hardened microelectronics production capabilities to enable new systems architectures and mature interconnect technologies for heterogeneous integration. • Continue development of new energetic materials formulations that are safer to produce and replace legacy materials that are no longer commercially available. • Improve upon spatial tolerances, residual stress reduction, and qualification of laser powder bed fusion technology to demonstrate the potential to supplement production capabilities for near term programs of record. • Advance development of AM processes for thermal spray coatings. • Develop near net shaping capability of Lithium component forming, to achieve TRL 5 by the end of FY 2025, to increase material efficiency and stretch the available inventory.	• Leverage additive manufacturing and other fabrication processes to continue implementation of a digital transformation in the design and development of components, tools, and fixtures. • Improve existing technologies and processes to decrease production costs, improve agility and throughput, and decrease production time to reduce or eliminate component manufacturing risk before transition and stockpile insertion. • Strengthen predictive simulation and data analytics capabilities for manufacturing processes, augmenting the enterprise's capabilities to rapidly mature manufacturing processes. • Enhance the development of additively manufactured high explosives for multiple component development as an alternative to obsolete and at-risk material technologies. • Transition technologies that conserve at-risk materials and replace obsolete materials to support stockpile stewardship. • Finalize transition of additive manufacturing technologies for pads and cushions to modernization programs, support novel develops in pad and cushion technology.	• Represents continued investment in priority weapon production areas such as CMOS8, improving production lot consistency and quality. • Increased investment in capabilities for High Explosives development, including new formulae, Additively Manufactured HE, and alternative binder solutions in response to the PFAS material risk. • Expanded development of Machine Learning technologies like on machine inspection for production processes

Stockpile Research, Technology, and Engineering
Capital Equipment Summary ($K)

	Total	Prior Years	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 vs FY 2023 ($)
Capital Equipment (> $500K)						
Total Non-MIE Capital Equipment (TEC <$10M)	N/A	N/A	63,842	68,694	84,624	+20,782
Advanced Sources and Detector, LANL	1,841,538	566,492	247,065	279,601	225,181	-21,884
ATS-5 System, LANL	250,000	0	0	2,000	15,000	+15,000
Crossroads (ATS-3) System, LANL	115,000	95,000	8,000	6,000	6,000	-2,000
AT System – ATS-6, LLNL	250,000	0	0	0	0	+0
Commodity Technology System (CTS) 2, LLNL (previously CTS-2)[a]	70,000	10,000	20,000	20,000	20,000	0
Commodity Technology System (CTS) 3, LLNL[a]	100,000	0	0	0	0	0
Cryogenic Magnetized Targets, LLNL	12,000	2,000	0	0	0	+0
El Capitan (ATS-4), LLNL[b]	600,000	288,000	158,000	96,000	58,000	-100,000
Final Optic Damage Inspection System Replacement, LLNL	12,200	0	0	0	12,200	12,200
Target and Beam Alignment System Replacement (formerly Target Alignment Sensor Upgrade), LLNL	11,000	0	0	0	11,000	+11,000
Tuolumne (formerly Unclassified El Capitan-like System (ATS-4)), LLNL[c]	17,000	0	4,000	3,000	3,000	-1,000
Dynamic Materials Properties Laser (DMPL, formerly Long Pulse Laser @ XFEL), SLAC	135,400	0	0	0	0	+0
ATS-Application Regression Testbed (ART) System - El Capitan, SNL	16,400	0	16,400	0	0	-16,400
Automated Refurbishment of Magnetically Insulated Transmission Line (MITL) Surfaces (ARMS), SNL	15,400	0	0	6,200	9,200	+9,200
Commodity Technology System (CTS) 2, SNL[a]	40,000	5,000	5,000	5,000	5,000	0
Total, Capital Equipment	**N/A**	**N/A**	**522,307**	**486,495**	**449,205**	**-73,102**

[a] Represents a blanket contract under which multiple useful HPC systems (asset) are purchased annually, some of which are financed using lease-to-own (LTO).
[b] El Capitan Final System acquisition financed with lease-to-own (LTO) agreement.
[c] NNSA will utilize lease-to-purchase contracts (also referred to as lease-to-own (LTO) for Commodity Technology and Advanced Technology Systems, visualization cluster, storage systems, and other HPC procurements when such contracts are found to be in the best programmatic and financial value to the government. DNN R&D and a LLNS overhead cost pool funds the remainder of costs for this MIE.

Outyears for Capital Equipment Summary ($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
Capital Equipment (> $500K)					
Total Non-MIE Capital Equipment (TEC <$10M)	80,437	76,000	77,596	79,225	N/A
Advanced Sources and Detector, LANL	224,660	172,364	126,175	0	0
ATS-5 System, LANL	100,000	95,500	20,500	10,000	7,000
AT System – ATS-6	2,000	8,000	70,000	86,000	84,000
Commodity Technology System (CTS) 3, LLNL	20,000	20,000	20,000	20,000	20,000
Cryogenic Magnetized Targets, LLNL	10,000	0	0	0	0
Tuolumne (formerly Unclassified El Capitan-like System (ATS-4)), LLNL[a]	3,000	3,000	1,000	0	0
Dynamic Materials Properties Laser (DMPL, formerly Long Pulse Laser @ XFEL), SLAC	82,900	0	24,300	0	28,200
Commodity Technology System (CTS) 2, SNL[b]	5,000	5,000	5,000	5,000	
Total, Capital Equipment	**527,997**	**379,864**	**344,571**	**200,225**	**N/A**

[a] NNSA will utilize lease-to-purchase contracts (also referred to as lease-to-own (LTO) for Commodity Technology and Advanced Technology Systems, visualization cluster, storage systems, and other HPC procurements when such contracts are found to be in the best programmatic and financial value to the government. DNN R&D and a LLNS overhead cost pool funds the remainder of costs for this MIE.

[b] Represents a blanket contract under which multiple useful HPC systems (asset) are purchased annually, some of which are financed using lease-to-own (LTO).

17-D-640 U1a Complex Enhancements Project (UCEP)
Nevada National Security Site (NNSS), Mercury, Nevada
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2025 Request for the U1a Complex Enhancements Project (UCEP) is $73,083,000 of Total Estimated Cost (TEC). The FY 2025 request will continue construction activities. The most recent Critical Decision (CD) for UCEP was the approval of CD-2/3, *Approve Performance Baseline and Start of Construction*, for on June 23, 2022, with a TPC of $610,155,000 and a CD-4, *Approve Start of Operations or Project Completion,* of December 2026. The current estimated Total Project Cost (TPC) is $761,560,000 and the current estimated CD-4 is the fourth quarter of FY 2028. Both the TPC and CD-4 are estimates pending a formal revision to the project baseline, to be approved by the Project Management Executive.

The Subproject 17-D-640-010 final cost was $45,994,292.

A Federal Project Director has been assigned to this project.

Significant Changes:

This data sheet serves as the report required per 50 USC §2744, since the total estimated cost for the project exceeds by more than 25% the amount shown in the FY 2024 budget justification. Project cost changes are detailed under this section.

Following are the changes from the previous version:

1. The document was updated to incorporate the final costs for 17-D-640-010.
2. The estimate and schedule have been revised to address inaccurate assumptions used to develop the original performance baseline, supply chain issues (i.e. increased material/equipment costs and extended delivery schedules), labor rate increases resulting from renegotiation of union agreements, and delays due to rehabilitation of existing underground drifts. This has resulted in a $151M increase in cost and a two-year delay in the CD-4 date. Approximately 64% of the cost increase is associated with subcontracts and material procurements; and the other approximately 36% increase in cost is associated with direct labor costs. The estimate and schedule are subject to change during the formal revision of the project's baseline.

Critical Milestone History

17-D-640: Total Project

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2017	9/25/2014	8/13/2015	1QFY2017	1QFY2019	2QFY2019	3QFY2019	N/A	3QFY2022
FY 2018	9/25/2014	8/13/2015	3QFY2017	4QFY2019	2QFY2019	4QFY2019	N/A	2QFY2023
FY 2019	9/25/2014	8/13/2015	08/09/2017	4QFY2019	2QFY2019	4QFY2019	N/A	2QFY2023
FY 2020	9/25/2014	8/13/2015	08/09/2017	2QFY2020	4QFY2019	2QFY2020	N/A	4QFY2025
FY 2021	9/25/2014	8/13/2015	08/09/2017	1QFY2021	3QFY2020	1QFY2021	N/A	4QFY2025
FY 2022	9/25/2014	8/13/2015	08/09/2017	4QFY2021	2QFY2021	4QFY2021	N/A	1QFY2026
FY 2023	9/25/2014	8/13/2015	08/09/2017	3QFY2022	3/11/2022	3QFY2022	N/A	1QFY2027
FY 2024	9/25/2014	8/13/2015	08/09/2017	06/23/2022	3/11/2022	06/23/2022	N/A	1QFY2027
FY 2025	9/25/2014	8/13/2015	08/09/2017	06/23/2022	3/11/2022	06/23/2022	N/A	4QFY2028

17-D-640-010: ECSE Access and Life Safety Infrastructure

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2017	9/25/2014	8/13/2015	1QFY2017	3QFY2017	4QFY2017	4QFY2017	N/A	2QFY2019
FY 2018	9/25/2014	8/13/2015	3QFY2017	2QFY2018	1QFY2018	2QFY2018	N/A	3QFY2020
FY 2019	9/25/2014	8/13/2015	08/09/2017	2QFY2019	3QFY2018	2QFY2019	N/A	2QFY2021
FY 2020	9/25/2014	8/13/2015	08/09/2017	2QFY2019	7/11/2018	2QFY2019	N/A	4QFY2023
FY 2021	9/25/2014	8/13/2015	08/09/2017	03/27/2019	7/11/2018	03/27/2019	N/A	4QFY2023
FY 2022	9/25/2014	8/13/2015	08/09/2017	03/27/2019	7/11/2018	03/27/2019	N/A	3QFY2022
FY 2023	9/25/2014	8/13/2015	08/09/2017	03/27/2019	7/11/2018	03/27/2019	N/A	4QFY2023
FY 2024	9/25/2014	8/13/2015	08/09/2017	03/27/2019	7/11/2018	03/27/2019	N/A	06/30/2022
FY 2025	9/25/2014	8/13/2015	08/09/2017	03/27/2019	7/11/2018	03/27/2019	N/A	06/30/2022

17-D-640-020: ECSE Laboratory and Support Infrastructure

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2017	9/25/2014	8/13/2015	1QFY2017	1QFY2019	2QFY2019	3QFY2019	N/A	3QFY2022
FY 2018	9/25/2014	8/13/2015	3QFY2017	4QFY2019	2QFY2019	4QFY2019	N/A	2QFY2023
FY 2019	9/25/2014	8/13/2015	08/09/2017	4QFY2019	2QFY2019	4QFY2019	N/A	2QFY2023
FY 2020	9/25/2014	8/13/2015	08/09/2017	2QFY2020	4QFY2019	2QFY2020	N/A	4QFY2025
FY 2021	9/25/2014	8/13/2015	08/09/2017	1QFY2021	3QFY2020	1QFY2021	N/A	4QFY2025
FY 2022	9/25/2014	8/13/2015	08/09/2017	4QFY2021	2QFY2021	4QFY2021	N/A	1QFY2026
FY 2023	9/25/2014	8/13/2015	08/09/2017	3QFY2022	3/11/2022	3QFY2022	N/A	1QFY2027
FY 2024	9/25/2014	8/13/2015	08/09/2017	06/23/2022	3/11/2022	06/23/2022	N/A	1QFY2027
FY 2025	9/25/2014	8/13/2015	08/09/2017	06/23/2022	3/11/2022	06/23/2022	N/A	4QFY2028

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range
Conceptual Design Complete – Actual date the conceptual design was completed (if applicable)
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
Final Design Complete – Estimated/Actual date the project design will be/was complete(d)
CD-3A – Approve Site Preparation
CD-3B – Approve Site Preparation
CD-3 – Approve Start of Construction/Execution
D&D Complete – Completion of D&D work
CD-4 – Approve Start of Operations or Project Closeout
Separate documentation will be submitted for combined CD-2/3 for each subproject

17-D-640-020: ECSE Laboratory and Support Infrastructure

Fiscal Quarter or Date

Fiscal Year	Performance Baseline Validation	CD-3A	CD-3B
FY 2021	1QFY2021	3QFY2020	N/A
FY 2022	4QFY2021	3QFY2021	N/A
FY 2023	6/23/2022	7/7/2021	8/30/2021

CD-3A – Site Preparation
CD-3B – Site Preparation

Project Cost History ($K)
17-D-640: Total Project

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2017	14,200	137,300	151,500	7,109	N/A	7,109	158,609
FY 2018	14,200	137,300	151,500	7,109	N/A	7,109	158,609
FY 2019	19,900	131,600	151,500	7,109	N/A	7,109	158,609
FY 2020	14,856	148,144	163,000	11,809	N/A	11,809	174,809
FY 2021	38,916	468,284	507,200	19,309	N/A	19,309	526,509
FY 2022	70,756	436,444	507,200	19,309	N/A	19,309	526,509
FY 2023	106,863	460,337	567,200	9,672	N/A	9,672	576,872
FY 2024	104,027	496,756	600,783	9,372	N/A	9,372	610,155
FY 2025	104,027	646,956	750,983	10,577	N/A	10,577	761,560

17-D-640-010: ECSE Access and Life Safety Infrastructure

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2017	2,700	23,940	26,640	981	N/A	981	27,621
FY 2018	2,700	23,940	26,640	981	N/A	981	27,621
FY 2019	8,400	38,240	46,640	981	N/A	981	47,621
FY 2020	3,356	44,784	48,140	1,981	N/A	1,981	50,121
FY 2021	3,356	44,784	48,140	1,981	N/A	1,981	50,121
FY 2022	3,356	46,074	49,430	1,398	N/A	1,398	50,828
FY 2023	3,356	45,374	48,730	1,391	N/A	1,391	50,121
FY 2024	3,356	45,374	48,730	1,391	N/A	1,391	50,121
FY 2025	3,356	41,353	44,709	1,286	N/A	1,286	45,995

17-D-640-020: ECSE Laboratory and Support Infrastructure

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2017	11,500	113,360	124,860	6,128	N/A	6,128	130,988
FY 2018	11,500	113,360	124,860	6,128	N/A	6,128	130,988
FY 2019	11,500	93,360	104,860	6,128	N/A	6,128	110,988
FY 2020	11,500	103,360	114,860	9,828	N/A	9,828	124,688
FY 2021	35,560	423,500	459,060	17,328	N/A	17,328	476,388
FY 2022	67,400	390,370	457,770	17,911	N/A	17,911	475,681
FY 2023	103,507	414,963	518,470	8,281	N/A	8,281	526,751
FY 2024	100,671	451,382	552,053	7,981	N/A	7,981	560,034
FY 2025	100,671	605,603	706,274	9,291	N/A	9,291	715,565

2. Project Scope and Justification

Scope

UCEP will perform mining and provide the supporting structures, systems, and components necessary to deploy the large Major Items of Equipment (MIE) diagnostic systems and experiments. The existing Principle Underground Laboratory for Subcritical Experiments (PULSE, formerly U1a Complex) orthogonal U1a.100 and U1a.104 drifts will be used to minimize the need for new mining.

17-D-640-010 includes the design, mining, fabrication, construction, installation, and commissioning of the underground areas and systems in the PULSE to provide accessibility, a refuge station, adequate ventilation, and construction power for the ensuing subproject 17-D-640-020. This subproject is required to support any significant construction activity in the eastern portion of the PULSE. While driven by the same mission in the ECSE subprogram, it is a subproject that can be designed and completed separately from the other subproject.

17-D-640-020 includes the design, mining, fabrication, construction, installation, and commissioning of the ECSE Area and systems to provide MIE diagnostic/detector alcove drifts and mechanical equipment drifts. Also included are safety basis and readiness activities. The project underground scope includes an experimental room with containment plugs for experiment execution, process control system, safety interlock system, diagnostic clean rooms and diagnostic infrastructure, and ancillary systems (overhead handling systems, power, cooling, ventilation, process water and oil, instrument air, spill mitigation, and shielding). This subproject includes a CD-3A and CD-3B for site preparation. The CD-3A scope is site preparation underground and the drilling of a borehole to run utilities and communications from the surface to the new experiment area; scope is projected to be completed in June 2024. The CD-3B scope consisted of site preparation above ground for the lay down yard/construction trailers and relocation of existing facility infrastructure and was completed.

Justification

DOE Order 413.3B Critical Decision, *CD-0 Approve Mission Need,* was approved on September 25, 2014, for the "Enhanced Capabilities for Subcritical Experiments (ECSE) at the Nevada National Security Site, PULSE." On November 4, 2015, the intersection of the U1a.100 and U1a.104 Drifts within the U1a Complex at the Nevada National Security Site was determined to be the only viable location for ECSE. The enhancements to the PULSE included in this line item will provide the drifts and the supporting structures, systems, and components necessary for the deployment of the MIEs to diagnose the subcritical hydrodynamic integrated weapons experiments using plutonium.

NNSA plans long-term investments supporting plutonium science at the NNSS. NNSS is the only site in the United States for experiments combining high explosives and plutonium, a core capability for NNSA's Stockpile Stewardship Program. Funds appropriated under this data sheet may be used for contracted support services to the Federal Program Manager and the Federal Project Director to conduct independent assessments of the planning and execution of this project required by DOE O 413.3B and to conduct technical reviews of design and construction documents.

The project is being conducted in accordance with the project management requirements in DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*. As allowed by DOE O 413.3B, work will be phased to improve overall efficiency.

OPCs are funded out of the Enhanced Capabilities for Subcritical Experiments subprogram under Stockpile Research, Technology, and Engineering.

Key Performance Parameters (KPPs)

The KPPs represent the minimum acceptable performance that the project must achieve.

Performance Measure	Completion Criteria
17-D-640-010: Ventilation and power sufficient to allow concurrent excavation for two headings east of the U1a.01 Drift	Documented in UCEP Subproject 010 Ventilation Plan; UCEP Electrical Load Calculation; Temporary Power Plan
17-D-640-010: An invert suitable for transport of ASD accelerator equipment between the U1h shaft station and U1a.104 Drift	Documented in Building Code Requirements for Structural Concrete; Invert Plan; Invert Sections; Cast-In-Place Concrete Specification
17-D-640-010: Direct access from the U1a.01 Drift to the U1a.104 Drift for equipment and personnel	Documented in General Arrangement Plan
17-D-640-010: Multiple egress pathways from the U1a.100 Drift and U1a.104 Drift to the U1a.01 Drift	Documented in General Arrangement Plan
17-D-640-010: Operational Refuge Station east of the U1a.01 Drift to accommodate the number of individuals anticipated to normally work in that area	Documented in NNSS Underground Facility Safety and Health Program Description; U1a.102D Drift Refuge Shelter Equipment
17-D-640-020: An invert suitable for installation of the ASD accelerator in the U1a.104 Drift	Documented in the revised Program Requirements Document and the revised Project Execution Plan
17-D-640-020: Utilities and mechanical systems sufficient to support operation and maintenance of the ASD accelerator in the U1a.104 Drift	Documented in the revised Program Requirements Document and the revised Project Execution Plan
17-D-640-020: A zero room structure and mechanical systems that meet requirements for conducting subcritical experiments in the U1a.100 Drift	Documented in the revised Program Requirements Document and the revised Project Execution Plan
17-D-640-020: Infrastructure that supports installation of a centralized control of operation system of the ASD accelerator and NDSE source	Documented in the revised Program Requirements Document and the revised Project Execution Plan
17-D-640-020: Infrastructure that supports acquisition of experiment diagnostic data	Documented in the revised Program Requirements Document and the revised Project Execution Plan

3. Project Cost and Schedule

17-D-640-010: ECSE Access and Life Safety Infrastructure

	($K)		
	Budget Authority (Appropriations)	**Obligations**	**Costs**
Total Estimated Cost (TEC)			
Design			
FY 2017	2,675	2,675	330
FY 2018	681	681	3,026
Total, Design	**3,356**	**3,356**	**3,356**
Construction			
FY 2017	8,800	8,800	0
FY 2018	14,484	14,484	0
FY 2019	10,000	10,000	8,344
FY 2020	2,000	2,000	16,859
FY 2021	6,069	6,069	13,513
FY 2022	0	0	2,637
FY 2023	0	0	0
Total, Construction	**41,353**	**41,353**	**41,353**
Total Estimated Costs			
FY 2017	11,475	11,475	330
FY 2018	15,165	15,165	3,026
FY 2019	10,000	10,000	8,344
FY 2020	2,000	2,000	16,859
FY 2021	6,069	6,069	13,513
FY 2022	0	0	2,637
FY 2023	0	0	0
Total, TEC	**44,709**	**44,709**	**44,709**
Other Project Costs (OPC)			
OPC, except D&D			
FY 2015	281	281	281
FY 2016	700	700	700
FY 2017	0	0	0
FY 2018	0	0	0
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	305	305	305
FY 2023	0	0	0
Total OPC, except D&D	**1,286**	**1,286**	**1,286**
OPC D&D			
FY 2015	0	0	0
FY 2016	0	0	0
FY 2017	0	0	0

($K)

	Budget Authority (Appropriations)	Obligations	Costs
FY 2018	0	0	0
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
Total, OPC D&D	**0**	**0**	**0**
Total Other Project Costs			
FY 2015	281	281	281
FY 2016	700	700	700
FY 2017	0	0	0
FY 2018	0	0	0
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	305	305	305
FY 2023	0	0	0
Total, OPC	**1,286**	**1,286**	**1,286**
Total Project Costs (TPC)			
FY 2015	281	281	281
FY 2016	700	700	700
FY 2017	11,475	11,475	330
FY 2018	15,165	15,165	3,026
FY 2019	10,000	10,000	8,344
FY 2020	2,000	2,000	16,859
FY 2021	6,069	6,069	13,513
FY 2022	305	305	2,942
FY 2023	0	0	0
Grand Total	**45,995**	**45,995**	**45,995**

	($K)		
	Budget Authority (Appropriations)	**Obligations**	**Costs**
Total Estimated Cost (TEC)			
Design			
FY 2017	25	25	25
FY 2018	6,935	6,935	1,045
FY 2019	10,000	10,000	11,056
FY 2020	33,000	33,000	31,477
FY 2021	36,008	36,008	34,890
FY 2022	14,703	14,703	22,178
Total, Design	**100,671**	**100,671**	**100,671**
Construction			
FY 2021	118,523	118,523	11,049
FY 2022	120,297	120,297	41,127
FY 2023	53,130	53,130	99,757
FY 2024	126,570	126,570	175,273
FY 2025	73,083	73,083	149,620
FY 2026	64,000	64,000	72,760
FY 2027	50,000	50,000	47,017
FY 2028	0	0	9,000
Total, Construction	**605,603**	**605,603**	**605,603**
Total Estimated Costs			
FY 2017	25	25	25
FY 2018	6,935	6,935	1,045
FY 2019	10,000	10,000	11,056
FY 2020	33,000	33,000	31,477
FY 2021	154,531	154,531	45,939
FY 2022	135,000	135,000	63,305
FY 2023	53,130	53,130	99,757
FY 2024[a]	126,570	126,570	175,273
FY 2025	73,083	73,083	149,620
FY 2026	64,000	64,000	72,760
FY 2027	50,000	50,000	47,017
FY 2028	0	0	9,000
Total, TEC	**706,274**	**706,274**	**706,274**
Other Project Costs (OPC)			
OPC, except D&D			
FY 2016	2,628	2,628	2,128
FY 2017	1,700	1,700	1,700
FY 2018	1,000	1,000	1,000
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0

[a] FY 2024 Budget Authority assumptions are based on the FY 2024 President's Budget Request.

	($K)		
	Budget Authority (Appropriations)	**Obligations**	**Costs**
FY 2022	105	105	0
FY 2023	0	0	0
FY 2024	0	0	0
FY 2025	0	0	0
FY 2026	3,858	3,858	1,000
FY 2027	0	0	2,763
FY 2028	0	0	700
Total OPC, except D&D	**9,291**	**9,291**	**9,291**
OPC D&D			
FY 2016	0	0	0
FY 2017	0	0	0
FY 2018	0	0	0
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
FY 2023	0	0	0
FY 2024	0	0	0
FY 2025	0	0	0
FY 2026	0	0	0
FY 2027	0	0	0
FY 2028	0	0	0
Total, OPC D&D	**0**	**0**	**0**
Total Other Project Costs			
FY 2016	2,628	2,628	2,128
FY 2017	1,700	1,700	1,700
FY 2018	1,000	1,000	1,000
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	105	105	0
FY 2023	0	0	0
FY 2024	0	0	0
FY 2025	0	0	0
FY 2026	3,858	3,858	1,000
FY 2027	0	0	2,763
FY 2028	0	0	700
Total, OPC	**9,291**	**9,291**	**9,291**
Total Project Costs (TPC)			
FY 2016	2,628	2,628	2,128
FY 2017	1,725	1,725	1,725
FY 2018	7,935	7,935	2,045
FY 2019	10,000	10,000	11,056
FY 2020	33,000	33,000	31,477

	($K)		
	Budget Authority (Appropriations)	**Obligations**	**Costs**
FY 2021	154,531	154,531	45,939
FY 2022	135,105	135,105	63,305
FY 2023	53,130	53,130	99,757
FY 2024	126,570	126,570	175,273
FY 2025	73,083	73,083	149,620
FY 2026	67,858	67,858	73,760
FY 2027	50,000	50,000	49,780
FY 2028	0	0	9,700
Grand Total	**715,565**	**715,565**	**715,565**

17-D-640: Total Project

	($K)		
	Budget Authority (Appropriations)	**Obligations**	**Costs**
Total Estimated Cost (TEC)			
Design			
FY 2017	2,700	2,700	355
FY 2018	7,616	7,616	4,071
FY 2019	10,000	10,000	11,056
FY 2020	33,000	33,000	31,477
FY 2021	36,008	36,008	34,890
FY 2022	14,703	14,703	22,178
Total, Design	**104,027**	**104,027**	**104,027**
Construction			
FY 2017	8,800	8,800	0
FY 2018	14,484	14,484	0
FY 2019	10,000	10,000	8,344
FY 2020	2,000	2,000	16,859
FY 2021	124,592	124,592	24,562
FY 2022	120,297	120,297	43,764
FY 2023	53,130	53,130	99,757
FY 2024	126,570	126,570	175,273
FY 2025	73,083	73,083	149,620
FY 2026	64,000	64,000	72,760
FY 2027	50,000	50,000	47,017
FY 2028	0	0	9,000
Total, Construction	**646,956**	**646,956**	**646,956**
Total Estimated Costs			
FY 2017	11,500	11,500	355
FY 2018	22,100	22,100	4,071
FY 2019	20,000	20,000	19,400
FY 2020	35,000	35,000	48,336
FY 2021	160,600	160,600	59,452
FY 2022	135,000	135,000	65,942

	($K)		
	Budget Authority (Appropriations)	**Obligations**	**Costs**
FY 2023	53,130	53,130	99,757
FY 2024	126,570	126,570	175,273
FY 2025	73,083	73,083	149,620
FY 2026	64,000	64,000	72,760
FY 2027	50,000	50,000	47,017
FY 2028	0	0	9,000
Total, TEC	**750,983**	**750,983**	**750,983**
Other Project Costs (OPC)			
OPC, except D&D			
FY 2015	281	281	281
FY 2016	3,328	3,328	2,828
FY 2017	1,700	1,700	1,700
FY 2018	1,000	1,000	1,000
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	410	410	305
FY 2023	0	0	0
FY 2024	0	0	0
FY 2025	0	0	0
FY 2026	3,858	3,858	1,000
FY 2027	0	0	2,763
FY 2028	0	0	700
Total OPC, except D&D	**10,577**	**10,577**	**10,577**
OPC D&D			
FY 2015	0	0	0
FY 2016	0	0	0
FY 2017	0	0	0
FY 2018	0	0	0
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
FY 2023	0	0	0
FY 2024	0	0	0
FY 2025	0	0	0
FY 2026	0	0	0
FY 2027	0	0	0
FY 2028	0	0	0
Total, OPC D&D	**0**	**0**	**0**
Total Other Project Costs			
FY 2015	281	281	281
FY 2016	3,328	3,328	2,828
FY 2017	1,700	1,700	1,700

($K)

	Budget Authority (Appropriations)	Obligations	Costs
FY 2018	1,000	1,000	1,000
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	410	410	305
FY 2023	0	0	0
FY 2024	0	0	0
FY 2025	0	0	0
FY 2026	3,858	3,858	1,000
FY 2027	0	0	2,763
FY 2028	0	0	700
Total, OPC	**10,577**	**10,577**	**10,577**
Total Project Costs (TPC)			
FY 2015	281	281	281
FY 2016	3,328	3,328	2,828
FY 2017	13,200	13,200	2,055
FY 2018	23,100	23,100	5,071
FY 2019	20,000	20,000	19,400
FY 2020	35,000	35,000	48,336
FY 2021	160,600	160,600	59,452
FY 2022	135,410	135,410	66,247
FY 2023	53,130	53,130	99,757
FY 2024	126,570	126,570	175,273
FY 2025	73,083	73,083	149,620
FY 2026	67,858	67,858	73,760
FY 2027	50,000	50,000	49,780
FY 2028	0	0	9,700
Grand Total	**761,560**	**761,560**	**761,560**

4. Details of Project Cost Estimate

17-D-640-010: ECSE Access and Life Safety Infrastructure

	($K)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	2,852	2,852	2,852
Project Management	504	504	504
Contingency	0	0	0
Total, Design	**3,356**	**3,356**	**3,356**
Construction			
Site Work	0	0	0
Equipment	0	0	0
Construction	35,985	34,234	31,606
Construction Management	5,368	5,368	5,368
Contingency	0	5,772	7,810
Total, Construction	**41,353**	**45,374**	**44,784**
Total Estimated Cost	**44,709**	**48,730**	**48,140**
Contingency, TEC	*0*	*5,772*	*7,810*
Other Project Cost (OPC)			
OPC except D&D			
R&D	0	0	0
Conceptual Planning	200	200	200
Conceptual Design	281	281	281
Other OPC Costs	805	910	1,500
Contingency	0	0	0
Total, OPC	1,286	1,391	1,981
Contingency, OPC	*0*	*0*	*0*
Total Project Cost	**45,995**	**50,121**	**50,121**
Total Contingency (TEC+OPC)	**0**	**5,772**	**7,810**

17-D-640-020: ECSE Laboratory and Support Infrastructure

	($K)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	65,519	65,519	65,519
Project Management	35,152	35,152	35,152
Contingency	0	0	0
Total, Design	**100,671**	**100,671**	**100,671**
Construction			
Site Work	0	0	0
Equipment	0	0	0
Construction	507,456	338,999	338,999
Construction Management	72,583	62,583	62,583
Contingency	25,564	50,021	49,300
Total, Construction	**605,603**	**451,603**	**450,882**
Total Estimated Cost	**706,274**	**552,274**	**551,553**
Contingency, TEC	*25,564*	*50,021*	*49,300*
Other Project Cost (OPC)			
OPC except D&D			
R&D	0	0	N/A
Conceptual Planning	300	300	300
Conceptual Design	728	728	728
Other OPC Costs	8,263	7,558	7,453
Contingency	0	0	0
Total, OPC	**9,291**	**8,586**	**8,481**
Contingency, OPC	*0*	*0*	0
Total Project Cost	**715,565**	**560, 860**	**560,034**
Total Contingency (TEC+OPC)	**25,564**	**50,021**	**49,300**

17-D-640: Total Project

	($K)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	68,371	68,371	68,371
Project Management	35,656	35,656	35,656
Contingency	0	0	0
Total, Design	**104,027**	**104,027**	**104,027**
Construction			
Site Work	0	0	0
Equipment	0	0	0
Construction	543,441	374,984	373,233
Construction Management	77,951	67,951	67,951
Contingency	25,564	50,021	55,072
Total, Construction	**646,956**	**492,956**	**496,256**
Total Estimated Cost	**750,983**	**596,983**	**600,283**
Contingency, TEC	*25,564*	*50,021*	*55,072*
Other Project Cost (OPC)			
OPC except D&D			
R&D	0	0	0
Conceptual Planning	500	500	500
Conceptual Design	1,009	1,009	1,009
Other OPC Costs	9,068	8,468	8,363
Contingency	0	0	0
Total, OPC	10,577	9,977	9,872
Contingency, OPC	*0*	*0*	*0*
Total Project Cost	**761,560**	**606,960**	**610,155**
Total Contingency (TEC+OPC)	***25,564***	***50,021***	***55,072***

5. Schedule of Appropriations Requests

($K)

Request Year	Type	Prior Years	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Total
FY 2017	TEC	131,600	19,900	0	0	0	0	0	0	0	151,500
	OPC	7,109	0	0	0	0	0	0	0	0	7,109
	TPC	138,709	19,900	0	0	0	0	0	0	0	158,609
FY 2018	TEC	131,600	19,900	0	0	0	0	0	0	0	151,500
	OPC	7,109	0	0	0	0	0	0	0	0	7,109
	TPC	138,700	19,900	0	0	0	0	0	0	0	158,609
FY 2019	TEC	121,600	29,900	0	0	0	0	0	0	0	151,500
	OPC	7,109	0	0	0	0	0	0	0	0	7,109
	TPC	128,700	29,900	0	0	0	0	0	0	0	158,609
FY 2020	TEC	88,600	48,800	25,600	0	0	0	0	0	0	163,000
	OPC	6,309	0	1,000	0	4,500	0	0	0	0	11,809
	TPC	94,909	48,800	26,600	0	4,500	0	0	0	0	174,809
FY 2021	TEC	88,600	160,600	135,000	123,000	0	0	0	0	0	507,200
	OPC	6,309	0	0	3,000	10,000	0	0	0	0	19,309
	TPC	94,909	160,600	135,000	126,000	10,000	0	0	0	0	526,509
FY 2022	TEC	88,600	160,600	135,000	123,000	0	0	0	0	0	507,200
	OPC	6,309	417	0	2,583	10,000	0	0	0	0	19,309
	TPC	94,909	161,017	135,000	125,583	10,000	0	0	0	0	526,509
FY 2023	TEC	88,600	160,600	135,000	53,130	129,870	0	0	0	0	567,200
	OPC	6,309	0	410	0	0	2,953	0	0	0	9,672
	TPC	94,909	160,600	135,410	53,130	129,870	2,953	0	0	0	576,872
FY 2024	TEC	88,600	160,600	135,000	53,130	126,570	33,083	0	0	0	596,983
	OPC	6,309	0	410	0	0	3,153	0	0	0	9,872
	TPC	94,909	160,600	135,410	53,130	126,570	36,236	0	0	0	606,855
FY 2025	TEC	88,600	160,600	135,000	53,130	126,570	73,083	64,000	50,000	0	750,983
	OPC	6,309	0	410	0	0	0	3,858	0	0	10,577
	TPC	94,909	160,600	135,410	53,130	126,570	73,083	67,858	50,000	0	761,560

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy	4Q FY2028
Expected Useful Life	30
Expected Future Start of D&D of this capital asset	4Q FY2058

Related Funding Requirements
(Budget Authority in Millions of Dollars)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations and Maintenance	36	41	1,080	1,240

7. D&D Information

The new area being constructed in this project is not replacing existing facilities.

8. Acquisition Approach

The project is being managed by the NNSS Management and Operating (M&O) contractor because of operations within the PULSE, which is an underground facility with limited access. Design and construction of the underground modifications is being performed by the NNSS M&O contractor through CLIN 001 on the M&O cost-plus contract.

Advanced Sources and Detectors (ASD) Major Item of Equipment (MIE)
LANL Lead (SNL, LLNL, NNSS, NRL support)
Project Data Sheet

1. Summary, Significant Changes, and Schedule and Cost History

Summary: The FY 2025 Request for the ASD MIE is $225,181,000. The FY 2025 Request will conduct testing of the Injector, two accelerator modules, and Solid-State Pulsed Power units at the Integrated Test Stand (ITS); continue fabrication of Accelerator cells and modules; continue fabrication of the remaining Solid State Pulsed Power units; and begin installation at the Principle Underground Laboratory for Subcritical Experiments (PULSE, formerly U1a Complex). The latest critical decision approved was CD-2/3, *Approve Performance Baseline and Start of Construction*, with a Total Project Cost (TPC) of $1,800,000,000 and a CD-4 date of May 2030. The cost of this project has increased to an estimated TPC of $1,841,538,000.

A Federal Project Director has been assigned to this project.

Significant Changes:

The project cost has increased to an estimated TPC of $1,841,538,000. This reflects:

- Ongoing impacts from the U1a Complex Enhancements Project (UCEP), which provides the infrastructure for this MIE, is experiencing higher than expected procurement costs, and is tracking behind schedule;
- Re-phasing funding to later in the FYNSP to prioritize other projects experiencing cost growth while maintaining ASD's schedule.

Critical Milestone History

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4
FY 2020	9/25/2014	6/7/2018	2/6/2019	2Q FY 2022	4Q FY 2021	2Q FY 2022	4Q FY 2025
FY 2021	9/25/2014	6/7/2018	2/6/2019	2Q FY 2022	4Q FY 2021	2Q FY 2022	4Q FY 2025
FY 2022	9/25/2014	6/7/2018	2/6/2019	2Q FY 2022	4Q FY 2021	2Q FY 2022	4Q FY 2025
FY 2023	9/25/2014	6/7/2018	2/6/2019	4Q FY 2022	3Q FY 2022	4Q FY 2022	3Q FY 2027
FY 2024	9/25/2014	6/7/2018	2/6/2019	11/30/2022	8/9/2022	11/30/2022	3Q FY 2030
FY 2025	9/25/2014	6/7/2018	2/6/2019	11/30/2022	8/9/2022	11/30/2022	3Q FY 2030

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range
Conceptual Design Complete – Actual date the conceptual design was completed (if applicable)
CD-1 – Approve Alternative Selection and Cost Range
CD-3A – Approve Long Lead Procurements – Scintillator components
CD-3B – Approve Long Lead Procurements – Injector and Pulsed power components
CD-2 – Approve Performance Baseline
Final Design Complete – Estimated/Actual date the project design will be/was complete(d)
CD-3 – Approve Start of Fabrication
CD-4 – Approve Start of Operations or Project Closeout

Fiscal Quarter or Date

Fiscal Year	Performance Baseline Validation	CD-3A	CD-3B
FY 2020	4Q FY 2021	3Q FY 2021	N/A
FY 2021	4Q FY 2021	3Q FY 2021	N/A
FY 2022	4Q FY 2021	3Q FY 2021	1Q FY 2022
FY 2023	11/25/2022	4/13/2021	1/3/2022

Project Cost History ($K)

Fiscal Year	Total Cost
FY 2020	791,600
FY 2021	1,061,355
FY 2022	939,655
FY 2023	1,284,161
FY 2024	1,800,000
FY 2025	1,841,538

2. Project Scope and Justification

Scope

The Enhanced Capabilities for Subcritical Experiments (ECSE) portfolio aims to construct a new underground laboratory in Nevada and to install large modern diagnostic systems necessary to evaluate plutonium implosion system experiments in support of the current and future stockpile. The ASD MIE is one of these diagnostic systems that involves installation of a linear induction accelerator into the PULSE. The ASD MIE will provide the capability to conduct weapons-scale, radiographically diagnosed subcritical experiments using special nuclear material (SNM). The radiographic data is required to refine the modern predictive physics models used to certify the present and future stockpile. Radiography (x-ray imaging of dense objects) is the principal tool for diagnosing dynamic weapons-scale experiments and is the key diagnostic for the National Hydrodynamic Test Program at both Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL). Currently, NNSA relies on hydrodynamic tests at the Dual Axis Radiographic Hydrodynamic Test Facility (DARHT) at LANL and at LLNL's Contained Firing Facility using the Flash X-Ray machine. In these tests, surrogate materials replace SNM in the experimental assembly. The surrogate tests explore many significant aspects of primary implosion physics but cannot explore the unique behavior of plutonium. The ASD MIE Project, funded within the ECSE subprogram, addresses this need and complements other diagnostics already supporting the subcritical, scaled experiments program.

The ASD Project is composed of an MIE (called Scorpius) for four-pulse, single-axis radiographic capability at weapons-relevant scales to be integrated with the U1a Complex Enhancements Project line item-funded infrastructure improvements, which will house the MIE. The ASD Project is responsible for the technology maturation, design, fabrication and installation, and commissioning of Scorpius through CD-4. The CD-3A long-lead procurement scope is for the procurement of the scintillator and imager with a total cost of $30.8 million and a scheduled completion of 3Q FY 2025. The CD-3B long-lead procurement scope is for components/materials to support the fabrication of the Injector and setup of the Integrated Test Stand with a total cost of $141.6 million and a scheduled completion of 4Q FY 2024.

Justification

The aggregate influences of aging, modern manufacturing techniques, modern materials, and evolving design philosophies are driving the stockpile toward the limits of the nuclear explosive testing database. In 2014, LANL and LLNL jointly identified a capability gap that challenges the ability to certify the stockpile in light of these changes, which involves the evaluation of plutonium response. In 2016, the JASON Defense Advisory Group identified the same gap in capability of the United States to carry out and diagnose such experiments. The ASD MIE, as part of ECSE, is designed to narrow this gap. Radiographic data from ECSE will help the validation of the W80-4 design and certification of the W87-1 Modification

Program. ECSE delivery in the 2030 supports these efforts. Funds appropriated under this data sheet may be used for contracted support services to the Federal Program Manager and the Federal Project Director to conduct independent assessments of the planning and execution of this project required by DOE O 413.3B and to conduct technical reviews of design and construction documents.

Key Performance Parameters (KPPs)

The KPPs represent the minimum acceptable performance that the project must achieve. Achievement of the KPPs will be a prerequisite for approval of CD-4, Project Completion. In summary, the MIE must be able to generate the x-ray energies and multi-pulse capability necessary to diagnose late-time dynamics in plutonium implosion experiments.

The KPPs established for CD-4 approval are:

- Four radiographic pulses
- Ability to vary the time between pulses (as measured center to center) in a ≥1500 ns window, at a pulse spacing ≤500 ns for 2 pulses
- Radiographic pulse lengths: between 20 and 80 ns with the ability to control the length (dose) of each pulse to within 5 ns
- Radiographic figure of merit: ≥1.2 line pairs per mm visible for 2 pulses with an overburden representing a nominal Object A density
- Radiographic figure of merit: ≥0.8 line pairs per mm visible for 2 pulses with an overburden representing a nominal Object C density

3. Financial Schedule

($K)

	Budget	Obligations	Costs
Funding			
FY 2015	10,500	10,500	3,130
FY 2016	10,500	10,500	6,463
FY 2017	7,500	7,500	14,207
FY 2018	34,395	34,395	32,531
FY 2019	50,000	50,000	51,746
FY 2020	112,160	112,160	82,700
FY 2021	166,752	166,752	147,887
FY 2022	174,685	174,685	137,087
FY 2023	247,065	247,065	180,579
FY 2024[a]	279,601	279,601	401,898
FY 2025	225,181	225,181	225,000
FY 2026	224,660	224,660	230,000
FY 2027	172,364	172,364	180,000
FY 2028	126,175	126,175	106,310
FY 2029	0	0	24,000
FY 2030	0	0	18,000
Grand Total	**1,841,538**	**1,841,538**	**1,841,538**

[a] FY 2024 Budget Authority assumptions are based on the FY 2024 President's Budget Request.

4. Details of Project Cost Estimate

Work Breakdown Structure Estimated Cost ($K)

WBS #	WBS Title	Current Estimate	Previous Estimate
1.01	Project Management	225,609	225,000
1.02	Radiographic System	1,140,820	1,140,100
1.03	System Engineering and Requirements	35,443	19,000
1.04	ITS Facility Installation, Major Subsystem Installation, Integration, & Testing	72,428	42,000
1.05	U1a Final Major Subsystem Installation, Integration, & Testing	70,281	61,000
1.06	Final Commissioning at U1a	13,710	12,900
	Management Reserve/Contingency/Federal Support	283,247	300,000
	Total	**1,841,538**	**1,800,000**

5. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy	3Q FY 2030
Expected Useful Life	30 years
Expected Future Start of D&D of this capital asset	3Q FY 2060

6. Acquisition Approach

The four Management and Operations contractors at the Laboratories and sites (LANL, LLNL, SNL, and NNSS) have formed a multi-site team to execute the Project. This management team structure encourages the full engagement of LANL, LLNL, SNL and NNSS, enabling the NNSA to leverage unique capabilities of each laboratory. It also unifies the design to construction process, which is especially important, as the PULSE is an underground facility with limited access.

Academic Programs and Community Support

Overview

Within the National Nuclear Security Administration, the challenges of modernizing the nuclear stockpile demand a strong and diverse base of national expertise and educational opportunities in specialized technical areas which uniquely contribute to nuclear stockpile stewardship. Academic Programs and Community Support is designed to invest in science and engineering disciplines of critical importance to NNSA's Nuclear Security Enterprise (NSE). Disciplines include nuclear science, radiochemistry, materials at extreme conditions, high energy density science, advanced manufacturing, and high-performance computing. The program's grants, centers, fellowships, and other funding opportunities offer an introduction to the mission and people in national laboratories. These relationships are instrumental to establish a workforce pathway which strengthens the future enterprise. The Community Capacity Building Program will support communities, including Tribal Nations and rural areas, affected by the activities at NNSA sites.

Academic Programs and Community Support has seven strategic objectives:

1. Strengthen key fields of research relevant to the nuclear security mission through scientific advancement.
2. Drive scientific and technical innovation within the academic community that can be leveraged by NNSA laboratories.
3. Develop the next generation of diverse, highly trained, technical workers able to support DOE/NNSA's core missions.
4. Ensure a diverse and robust cadre of experts trained in disciplines vital to the Nuclear Security Enterprise (NSE) who are eligible to work at the highest levels of nuclear security.
5. Maintain technical expertise external to the NSE that can be leveraged to provide advice, cross-check, and peer review.
6. Expand the pool of workforce talent in the NSE by taking a more comprehensive and integrated approach to academic pathway development.
7. Provide benefits to disadvantaged communities, including Tribal Nations and rural localities impacted by NSE activities.

Academic Programs and Community Support enables robust and diverse Science, Technology, Engineering, and Mathematics (STEM) research for educational communities through a variety of methods. Investments in consortia and centers of excellence provide collaborative partnerships ready to tackle large questions through multi-disciplinary approaches, by leveraging preeminent scientists in relevant fields. Research grants and focused investigatory centers support individual principal investigators to foster a vibrant community that is responsive to new breakthroughs by providing flexibility for new ideas, diversity, and career growth. Specific support to minority and Tribal-serving institutions prepares a diverse workforce of world-class talent through strategic partnerships. Fellowships provide graduate students key opportunities to connect with NNSA missions and provide direct experiences at NSE sites. User facilities provide opportunities for academic partners to use NNSA's cutting-edge research facilities and push frontiers of current scientific understanding. All Academic Programs and Community Support opportunities focus on quality science through competitive award, connection with NNSA mission work at national security laboratories and nuclear weapons production facilities, and a view to NSE's future needs and opportunities.

Primary responsibilities of this program include:

- Managing academic solicitations and competitive awards.
- Providing premier technical expertise aligned with the NSE's current and future needs.
- Enabling connections between academic research communities and the NSE, as well as between communities surrounding NSE facilities and the NSE to foster understanding of NNSA mission.
- Attracting and training a future workforce through on-site opportunities and personal connections with laboratory scientists and engineers.

Academic Programs and Community Support is made up of eight subprograms:

1. Stewardship Science Academic Alliance (SSAA)
2. Minority Serving Institution Partnership Program (MSIPP)
3. Tribal Education Partnership Program (TEPP)
4. Joint Program in High Energy Density Laboratory Plasmas (JPHEDLP)
5. Computational Science Graduate Fellowship (CSGF)
6. Predictive Science Academic Alliance Program (PSAAP)
7. Pipeline Development (PD)
8. Community Capacity Building Program (CCBP)

Academic Programs and Community Support
Funding ($K)

Italics denotes reporting level	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
Academic Programs and Community Support	**111,912**	**111,912**	**128,188**	***+16,276***	***+14.5%***
Stewardship Science Academic Alliance (SSAA)	*24,987*	*24,987*	*25,934*	*+947*	*+3.8%*
Minority Serving Institution Partnership Program (MSIPP)	*45,000*	*45,000*	*45,000*	*0*	*0%*
Tribal Education Partnership Program (TEPP)	*10,000*	*10,000*	*10,000*	*0*	*0%*
Joint Program in High Energy Density Laboratory Plasmas (JPHEDLP)	*8,883*	*8,883*	*8,993*	*+110*	*+1.2%*
Computational Science Graduate Fellowship (CSGF)	*2,000*	*2,000*	*2,109*	*+109*	*+5.5%*
Predictive Science Academic Alliance Program (PSAAP)	*21,042*	*21,042*	*21,152*	*+110*	*+0.5%*
Community Capacity Building Program	*0*	*0*	*15,000*	*15,000*	*0%*
Total, Academic Programs and Community Support	**111,912**	**111,912**	**128,188**	**+16,276**	**+14.5%**

Academic Programs and Community Support
Outyear Funding ($K)

Italics denotes reporting level	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Academic Programs and Community Support	**121,851**	**121,851**	**121,851**	**121,851**
Stewardship Science Academic Alliance (SSAA)	*24,971*	*24,971*	*24,971*	*24,971*
Minority Serving Institution Partnership Program (MSIPP)	*45,000*	*45,000*	*45,000*	*45,000*
Tribal Education Partnership Program (TEPP)	*10,000*	*10,000*	*10,000*	*10,000*
Joint Program in High Energy Density Laboratory Plasmas (JPHEDLP)	*8,868*	*8,868*	*8,868*	*8,868*
Computational Science Graduate Fellowship (CSGF)	*1,985*	*1,985*	*1,985*	*1,985*
Predictive Science Academic Alliance Program (PSAAP)	*21,027*	*21,027*	*21,027*	*21,027*
Community Capacity Building Program	*10,000*	*10,000*	*10,000*	*10,000*
Total, Academic Programs and Community Support	**121,851**	**121,851**	**121,851**	**121,851**

Academic Programs and Community Support
Explanation of Major Changes ($K)

	FY 2025 Request vs FY 2023 Enacted
Academic Programs and Community Support	
Stewardship Science Academic Alliance (SSAA): No significant change. Increase maintains inflation-adjusted programmatic efforts.	+947
Minority Serving Institution Partnership Program (MSIPP): No change.	0
Tribal Education Partnership Program (TEPP): No change.	0
Joint Program in High Density Laboratory Plasmas (JPHDL): No significant change. Increase maintains inflation-adjusted programmatic efforts.	+110
Computational Science Graduate Fellowship (CSGF): No significant change. Increase maintains inflation-adjusted programmatic efforts.	+109
Predictive Science Academic Alliance Program (PSAAP): No significant change. Increase maintains inflation-adjusted programmatic efforts.	+110
Pipeline Development: No change.	0
Community Capacity Building Program: This funding will support the establishment of the program and will provide foundational funding for small-scale projects at the laboratories, plants, and sites (LPS) to improve local infrastructure, increase educational capacity and skills development, and engagement opportunities in areas affected by the activities at NNSA sites.	+15,000
Total, Academic Programs and Community Support	**+16,276**

Academic Programs and Community Support
Stewardship Science Academic Alliance (SSAA)

Description
The Stewardship Science Academic Alliance (SSAA) subprogram supports scientific academic research programs to develop the next generation of highly trained technical workers able to support its core mission and ensure a strong community of technical peers, external to NNSA national laboratories, capable of providing peer review and scientific competition to strengthen the basic fields of research relevant to NSE.

The SSAA subprogram funds collaborative centers of excellence and individual investigator research projects which conduct fundamental science and technology research of relevance to stockpile stewardship. Current technical areas include studies of materials under extreme conditions, low-energy nuclear science, high energy density physics, and radiochemistry. SSAA funding supports research at approximately 80 universities, including training of over 200 graduate students and post-doctoral researchers. A key element of both centers of excellence and individual investigator awards is the connection of students with NSE. These opportunities are focused on technical fields critical to stewardship science, building a field of talented researchers and committed doctoral students sharing a common desire to advance science while contributing to national security.

The SSAA subprogram also funds the Stewardship Science Graduate Fellowship (SSGF) and the Laboratory Residency Graduate Fellowship (LRGF) with the goal of addressing workforce needs by providing financial support and professional development opportunities to students pursuing a Ph.D. in fields of study that address complex science and engineering problems critical to stockpile stewardship.

Highlights of the FY 2025 Budget
- Supports awards from the FY 2024 funding opportunity announcement for SSAA university research grants to solicit scientific research in areas crucial to the Stockpile Stewardship Program.
- Provides support for ongoing SSAA centers of excellence.
- Continues to provide support and hands-on training for graduate students in areas relevant to stockpile stewardship, connecting these students with opportunities at the national laboratories, by placing a new, annual cohort of fellows as part of the SSGF and LRGF graduate fellowship programs.
- Sponsors the annual SSAP symposium, bringing together research teams supported by the SSAA and the JPHEDLP Programs. In addition to highlighting current research and encouraging collaboration, a focus on students includes activities such as poster competitions, student lunch with lab representatives, and “lab hour” highlighting laboratory directions and opportunities for students/graduates.

FY 2026 – FY 2029 Key Milestones
- Supports cohort of individual investigator grants in fields of nuclear science, radiochemistry, and materials at extreme conditions to develop the next generation of highly trained technical staff.
- Supports new Funding Opportunity Announcement for the next cohort of centers of excellence expected to be released in Quarter 2 (Q2) FY 2027, to be awarded on FY 2028 funds (joint with JPHEDLP).
- Supports full cohorts of SSGF and LRGF fellows.

Stewardship Science Academic Alliance
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Stewardship Science Academic Alliance $24,987,000	**Stewardship Science Academic Alliance $25,934,000**	**Stewardship Science Academic Alliance +$947,000**
• Program was under Academic Programs within Stockpile Research, Technology, and Engineering (SRT&E). • Supported scientific research in areas crucial to the stockpile stewardship program. • Supported final year of a majority of SSAA centers of excellence. • Continued to provide support and hands on training for graduate students in areas relevant to stockpile stewardship, through fellowship programs. • Sponsored highly attended annual SSAP symposium bringing together research teams supported by the SSAA and JPHEDLP programs.	• Support the President's goals of advancing equity in STEM through the Federal Government and ensuring a strong future workforce. • Support the SSAA centers of excellence and research grants. • Sponsor highly attended annual SSAP symposium bringing together research teams supported by the SSAA the JPHEDLP programs. • Continue to provide support and hands on training for graduate students in areas relevant to stockpile stewardship, through fellowship programs.	• The changes in funding requested are to support increased costs within the SSAA centers of excellence and additional costs associated with the annual SSAP symposium supported by the SSAA and JPHEDLP programs.

Academic Programs and Community Support
Minority Serving Institution Partnership Program (MSIPP)
Tribal Education Partnership Program (TEPP)

Description
NNSA's Minority Serving Institution Partnership Program (MSIPP) and Tribal Education Partnership Program (TEPP)'s mission is to build and support a STEM-career pathway focused on preparing a diverse workforce through strategic partnerships between Minority Serving Institutions (MSIs) and the NSE. TEPP builds capacity and increases collaborations with Tribal Colleges and Universities (TCUs). MSIPP and TEPP align investments in university capacity and workforce development with the NNSA mission, developing needed skills and talent for NSE's enduring technical workforce and enhances research and education capacity at under-represented colleges and universities.

The two programs have the following objectives:
1. Building and strengthening STEM research and educational capacities of MSIs and TCUs.
2. Targeting collaborations and increasing interactions between MSIs and TCUs, and DOE/NNSA laboratories, plants, and other sites to increase direct access to NSE STEM resources.
3. Growing the number of MSI and TCU students that graduate with STEM degrees.
4. Increasing the number of MSI and TCU students hired into the NSE's STEM workforce.

NNSA continues to develop the next-generation workforce through MSIPP and TEPP which together fund 35 consortia consisting of 54 MSIs, including 19 Historically Black Colleges and Universities (HBCUs), 26 Hispanic Serving Institutions (HSIs), 1 Predominantly Black Institution (PBI), and 8 Tribal Colleges and Universities (TCUs), along with 14 NSE locations.

Highlights of the FY 2025 Budget
- Pursues consortium-based STEM grants that specifically target HBCUs, HSIs, and TCUs, and provides the opportunity to build STEM capacity and academic infrastructure in alignment with NSE.
- Increases student engagement and internship opportunities, supporting the career pathway for diverse students into the NSE.
- Continues and enhances existing partnerships with MSIs.
- Supports MSIPP consortium-based model focused on capacity building, research, student enrichment programs, and internships in STEM.
- Aids partnerships between Junior and Community Colleges and the NSE with a focus on trade and skilled labor fields of study.
- Builds an educational/institutional infrastructure and enhances the pathway of diverse, high-quality talent in STEM academic disciplines and careers.

FY 2026 – FY 2029 Key Milestones
- Develops and maintains a long-term, recruiting pathway to NNSA laboratories, plants, and sites by increasing awareness of MSIPP, TEPP, and sustaining partnerships between MSIs and NSE.
- Partners with other federal agencies and/or programs to broaden the reach of the MSIPP with a goal of pursuing mission-related STEM projects to further enhance the educational and/or research capacity at MSIs.
- Grows the number of TCUs partners participating in MSIPP to build their capacity and academic infrastructure in STEM and increase awareness of opportunities available within NSE.

Minority Serving Institution Partnership
Tribal Education Partnership Program
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Minority Serving Institution Partnership Program **$45,000,000**	**Minority Serving Institution Partnership Program** **$45,000,000**	**Minority Serving Institution Partnership Program** **$0**
• Program was under Academic Programs within SRT&E. • Continued existing partnerships with Minority Serving Institutions. • Continued consortium-based STEM grants that specifically targeted HBCUs, HSIs, and TCUs and provided the opportunity to build STEM capacity and academic infrastructure with alignment to the nuclear security enterprise. • Increased student engagement and internship opportunities and confirmed the hiring of various minority students into the nuclear security enterprise that have matriculated through various STEM consortium pathways.	• Continue existing partnerships with Minority Serving Institutions. • Continue consortium-based STEM grants that specifically target HBCUs, HSIs, and TCUs and provide the opportunity to build STEM capacity and academic infrastructure with alignment to the nuclear security enterprise. • Increase student engagement and internship opportunities and confirm the hiring of various minority students into the nuclear security enterprise that have matriculated through various STEM consortium pathways.	• No change.
Tribal Education Partnership Program **$10,000,000**	**Tribal Education Partnership Program** **$10,000,000**	**Tribal Education Partnership Program** **$0**
• Program was under Academic Programs within SRT&E. • Maintained partnerships with TCUs. • Maintained educational/institutional infrastructure and enhanced the pathways for diverse, high-quality talent in STEM academic disciplines and careers.	• Maintain partnerships with TCUs. • Maintain educational/institutional infrastructure and enhancing the pathways for diverse, high-quality talent in STEM academic disciplines and careers.	• No change.

Academic Programs and Community Support
Joint Program in High Energy Density Laboratory Plasmas

Description

High Energy Density (HED) states are central to many aspects of nuclear weapons. Maintaining a strong HED academic community in this unique field will be critical for the future needs of a modern nuclear stockpile. The Joint Program in High Energy Density Laboratory Plasmas (JPHEDLP) is designed to steward the study of laboratory HED plasma physics by funding academic research of ionized matter in laboratory experiments for which the stored energy reaches approximately 100 billion joules per cubic meter (i.e., pressures of approximately 1 million atmospheres). The program has three primary elements: individual investigator research grants, research centers of excellence, and facility access.

Individual investigator grants: NNSA's Office of Defense Programs partners with DOE's Office of Fusion Energy Sciences in the Office of Science to issue an annual joint solicitation for HED Laboratory Plasmas research. The coordination across agencies enables the support of a strong and broad academic presence in HED science, leveraging common interests while assuring NNSA specific interests in this area remain vibrant. Competitively awarded research grants are selected through the joint solicitation conducted in coordination with the Office of Science.

Research Centers of Excellence: The JPHEDLP funding also supports HED centers of excellence selected under the competitive SSAA process. Centers of Excellence are an integrated, multi-institutional, collaborative effort focused on a central problem or theme. These centers work closely with NSE scientists and maintain a core set of academic expertise in key technical areas.

Facility access: Supports broad, scientific facility access to apply unique tools to accomplish cutting-edge science. Provides hands-on research experience to academic and industrial researchers using the Omega and Omega EP lasers and other NNSA facilities as tools for conducting basic research experiments. In the pursuit of fundamental science advances, the innovative development of diagnostics and platforms by user facility partners often have proven beneficial to NNSA experimental efforts.

Community development: Specialized educational opportunities train and attract students in HED science. The JPHEDLP provides funding for HED summer schools and facility workshops.

Highlights of the FY 2025 Budget

- Expands opportunities for national collaboration in high energy density science research through the enhancement of existing grants and cooperative agreements, as well as the establishment of new financial assistance awards.
- Supports academic research centers of excellence in HED science.
- Awards academic research grants in HEDLP competitively awarded through annual HEDLP Funding Opportunity Announcement (FOA) held jointly with DOE's Office of Science. Annual selection of NNSA supported awards will enhance flexibility, attract new researchers, and assure career opportunities.
- Supports facility access and community development through facility time, travel support, HED summer schools, and facility user workshops.

FY 2026 – FY 2029 Key Milestones

- Supports cohorts of HEDLP grants to enable a strong and broad academic presence in HED science.
- Continues collaborating with DOE-SC on next annual joint solicitation for HEDLP research.
- Releases new Funding Opportunity Announcement for the next cohort of HED centers of excellence in Q2 FY 2027, to be awarded on FY 2028 funds (joint with SSAA).

Joint Program in High Energy Density Laboratory Plasmas
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Joint Program in High Energy Density Laboratory Plasmas $8,883,000	**Joint Program in High Energy Density Laboratory Plasmas $8,993,000**	**Joint Program in High Energy Density Laboratory Plasmas +$110,000**
• Program was under Academic Programs within SRT&E. • Expanded opportunities for national collaboration in HED science research through the enhancement of existing grants and cooperative agreements as well as the establishment of new financial assistance awards. • Supported academic research centers of excellence in HED science. • Supported academic research grants in HEDLP competitively awarded through annual HEDLP funding opportunity announcement held jointly with the DOE Office of Science. • Continued to support facility access and community development through travel support for shot time at NNSA facilities and supporting the HED summer schools and facility user workshops. • Supported a 2-year pilot program for ZNetUS to advance pulsed magnetic science, technology, and high energy density physics for energy and national security applications and assist in creating the needed pipeline of next-generation scientific leaders.	• Continue to expand opportunities for national collaboration in high energy density science research through the enhancement of existing grants and cooperative agreements, as well as the establishment of new financial assistance awards. • Continue to support academic research grants in HEDLP competitively awarded through annual HEDLP funding opportunity announcement held jointly with the DOE Office of Science. • Continue to support facility access and community development through travel support for shot time at NNSA facilities and supporting the HED summer school and facility user workshops.	• The changes in funding requested are to support increased costs within the HED centers of excellence and HEDLP grants.

Academic Programs and Community Support
Computational Science Graduate Fellowship (CSGF)

Description
The goal of the DOE Computational Science Graduate Fellowship (CSGF) program is to cultivate the next generation of scientists and engineers in computational sciences. For NNSA, CSGF supports the Advanced Simulation and Computing (ASC) and Stockpile Modernization missions by establishing academic programs for multidisciplinary simulation science and through graduate fellowships providing students the relevant experience for weapons code development through open science applications. Activities are managed by the Krell Institute and jointly funded with the DOE Office of Science's Advanced Scientific Computing Research program.

The DOE CSGF fosters a community of enthusiastic and committed doctoral students, alumni, DOE laboratory staff and various scientists who desire to have an impact on national security and energy missions while advancing their research. It increases collaboration between NNSA national security laboratories, the fellows, and their universities by enhancing the fellows' research experience at the national laboratories via access to unclassified, high-performance computing systems, and exposing them to the broader, multi-disciplinary research activities at the laboratories. The program also provides a yearly stipend, tuition fee coverage, and academic allowance.

Highlights of the FY 2025 Budget
- Collaborates with DOE Office of Science in funding a new cohort of fellows to be trained as next-generation leaders in computational science.
- Fosters a CSGF community of energetic and committed doctoral students, alumni, and DOE/NNSA laboratory staff who together serve as a support system for the new and current fellows.
- Strengthens the NNSA commitment for CSGF to support resources for ensuring a supply of scientists and engineers trained to meet NNSA workforce needs in computational science.

FY 2026 – FY 2029 Key Milestones
- Support the next cohorts of fellows in the CSGF Program.
- Increase visibility for computational science careers by supporting the CSGF program to ensure a pipeline of trained scientists and engineers to meet DOE/NNSA workforce needs in computational science.
- Promote research performed in interdisciplinary topics within mathematics, computational science, and engineering that address the nation's scientific and technological challenges as discussed in the National Academies of Science, Engineering, and Medicine Post-Exascale Report
- Continue to strengthen ties between the national academic community and DOE/NNSA laboratories so the fellowship's multidisciplinary nature builds the national scientific community.
- Enhance experience for practicum/internship requirement which is key in workforce pipeline between U.S. academic institutions and DOE/NNSA laboratories.

Computational Science Graduate Fellowship
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Computational Science Graduate Fellowship $2,000,000	**Computational Science Graduate Fellowship $2,109,000**	**Computational Science Graduate Fellowship +$109,000**
• Program was under Academic Programs within SRT&E. • Collaborated with DOE Office of Science in funding a new class-size record number of 39 first-year fellows in the 2023 cohort to be trained as next-generation leaders in computational science. • Supported CSGF community of energetic and committed doctoral students, alumni, and DOE/NNSA laboratory staff who all together serve as a support system for the new and current fellows. • Continued support and recruitment efforts for enhancing number of scientists and engineers trained to meet NNSA workforce needs in computational science.	• Collaborate with DOE Office of Science in funding new cohort of fellows to be trained as next-generation leaders in computational science. • Continue support to CSGF community of energetic and committed doctoral students, alumni, and DOE/NNSA laboratory staff who all together serve as a support system for the new and current fellows. • Strengthen support for enhancing number of scientists and engineers trained to meet NNSA workforce needs in computational science.	• Changes in funding is to support increased costs for the next cohort of fellows.

Academic Programs and Community Support
Predictive Science Academic Alliance Program (PSAAP)

Description
The Predictive Science Academic Alliance Program (PSAAP) engages with leading U.S. universities, focusing on the development and demonstration of technologies and methodologies to solve open science and engineering application problems. The research performed by the universities in this program is discipline-focused to further predictive science and enabled by effective use of high-performance computing. Predictive science is the aim of this program and is based on verification and validation and uncertainty quantification methodologies for large-scale simulations.

PSAAP currently consists of the following types of centers: Multi-disciplinary Simulation Centers (MSC), Single-Discipline Centers (SDCs), and Focused Investigatory Centers (FIC). MSCs focus on scalable application simulations, targeting large-scale, integrated multidisciplinary problems, while SDCs focus on scalable application simulation for targeting a broad single science or engineering discipline. FICs are tightly focused on a specific research topic of interest to NNSA's mission in either a science/engineering discipline or an Exascale enabling technology.

PSAAP has a long-term goal to cultivate the next generation of scientists and engineers to support the ASC and Stockpile Modernization missions. The funded PSAAP centers will help their institutions develop new research techniques and strengthen existing efforts, for multidisciplinary, computational science and engineering research, while providing students and research staff relevant code development and high-performance computing (HPC) experience through open science and engineering applications.

Highlights of the FY 2025 Budget
- Continues to support large-scale, multi-disciplinary, predictive science, simulation-based research as a major academic applied research program.
- Promotes additional focus in PSAAP IV on new approaches in verification, validation, uncertainty quantification as well as the development and application of artificial intelligence and machine-learning technologies to improve quantified predictive capabilities.
- Selects and supports new PSAAP IV centers while strengthening engagement with the academic community. The new centers will be categorized as Predictive Simulation Centers (PSCs) which focus on large-scale single-disciplinary and multidisciplinary research, and Focused Investigatory Centers (FICs) that perform research focused on various exascale-enabling technologies relevant to NNSA's mission.
- Manages PSAAP IV centers for their first year to achieve annual milestone objectives.
- Administers dedicated, appropriate ASC computing resources and user support to enable the PSAAP centers to achieve their respective simulation demonstration milestones regarding their overarching research objectives.

FY 2026 – FY 2029 Key Milestones
- Continues engagement and support for the PSAAP IV centers and their respective cooperative agreements.
- Supports continued development and demonstration of technologies and methodologies to support effective exascale computing in the context of science/engineering applications.
- Promotes additional focus on new approaches in verification, validation, uncertainty quantification as well as the development and application of artificial intelligence and machine learning technologies to improve quantified predictive capabilities.
- Coordinates collaborations between NNSA laboratories and U.S. academic community involving training, recruiting, and student internships at NNSA Laboratories with high-level researchers in key disciplines for stockpile stewardship
- Provides appropriate ASC High Performance Computing (HPC) resources, user support and unclassified computing cycles to enable PSAAP IV centers to achieve their annual simulation demonstration milestone objectives.
- Executes plan for PSAAP V procurement by preparing the Notice of Funding Opportunity (NOFO) Pre-Application and Full Application solicitations.
- Strengthens and ensures pipeline of trained scientists and engineers engaged in immersive research experiences as mentioned in the Foundational Research Gaps and Future Directions for Digital Twins Report as well as the Post-

Exascale Computing Report both published by the National Academies of Science, Engineering, and Medicine to meet NNSA workforce needs in large-scale, multidisciplinary, predictive science, and simulation-based research.

Predictive Science Academic Alliance Program
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Predictive Science Academic Alliance Program $21,042,000	**Predictive Science Academic Alliance Program $21,152,000**	**Predictive Science Academic Alliance Program +$110,000**
• Program was under Academic Programs within SRT&E. • Continued development and demonstration of technologies and methodologies to support effective exascale computing in the context of science and engineering applications. • Supported PSAAP III Academic Alliance Centers in their fourth project year to achieve annual milestone objectives. • Supported collaborations with the PSAAP III centers involving training, recruiting, and working with key researchers in disciplines relevant to stockpile stewardship. • Provided appropriate ASC HPC resources and user support for the PSAAP centers to accomplish the requisite simulation demonstration milestones.	• Kickoff PSAAP IV Academic Alliance Centers, as PSAAP III will finish at the end of FY 2024. • Continue development and demonstration of technologies and methodologies to support exascale computing in the context of science and engineering applications. • Enhance collaboration between NNSA laboratories, fellows, and U.S. academic community involving training, recruiting, and student internships at NNSA laboratories with top researchers in key disciplines.	• Changes in funding are to support increased costs with the PSAAP IV centers and new collaborations with universities on research areas of interest to NNSA national laboratories involving training, recruiting, and working with top researchers in key disciplines required by stockpile stewardship.

Academic Programs and Community Support
Pipeline Development

Description

Pipeline Development supports efforts to grow the workforce in disciplines vital to the NSE by increasing NNSA's presence within the scientific community and expanding the pool of STEM talent who are identified, recruited, cleared, and retained in the NSE.

This program is designed to introduce students to pathways and careers in STEM within NNSA, to support outreach efforts and expose students to STEM activities, to increase student and faculty engagements, and to increase the number of trained students who join the workforce at NNSA laboratories, plants, and sites (LPS).

Highlights of the FY 2025 Budget

- No funding requested in FY 2025. New program originally proposed in FY 2024.

Pipeline Development
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Pipeline Development Program **$0**	**Pipeline Development Program** **$0**	**Pipeline Development Program** **$0**
• New program to begin when funding is available.	• New program to begin when funding is available. • Program goals are to increase NNSA's presence within the STEM community and expand the talent pool to be identified, recruited, cleared, and retained by NSE.	• No change.

Academic Programs and Community Support
Community Capacity Building Program

Description
The Community Capacity Building Program will provide benefits to underserved communities, including Tribal Nations and rural areas, affected by the activities at NNSA sites. Benefits will include:

- Creating opportunities in communities experiencing job loss and economic hardship.
- Supporting projects to enable communities to restore and expand important functions, services, and resources.
- Funding of infrastructure projects that stimulate the economy and increase community resilience such as broadband access and other investments.
- Enhancing outreach to ensure community engagement of historically underrepresented groups in decision making processes.
- Increasing educational capacity for students (grades K-16) and adults pursuing continuing education and skills training at community colleges, technical colleges, and training centers.
- Expanding opportunities for communities to engage with the national laboratories, plants, and sites (LPS) through professional and educational programming, externships, internships, apprenticeships, and community focus groups that bring together the community with LPS leadership to discuss and address community needs.

Projects under the CCBP form four pillars:

1. Infrastructure Services – assistance with infrastructure needs to benefit the community (housing, transportation, educational/recreational tangibles)
2. Career and Business Development –training for native/local residents to qualify them for employment at NNSA laboratories, plants, and sites (LPS) related community partners; services to stimulate innovation and build career resources.
3. Community Services – LPS engagement with the community, educational programs, STEM programs, tutoring, internships/externships, crime prevention.
4. Health Services – services aimed to increase the general health of the populace in the community.

Highlights of the FY 2025 Budget

- Provide foundational funding to the NNSA LPS Community Outreach Offices to fund small-scale projects.
- Develop metrics to track progress, ensure program success, and fulfillment of objectives.
- Stand up the CCBP Council to share experiences and lessons learned and to track program metrics.

FY 2026 – FY 2029 Key Milestones

- Provide foundational funding to NNSA LPS Community Outreach Offices to increase staffing and to continue to fund small-scale projects.
- Collect and report out on metrics to track progress, ensure program success, and fulfillment of objectives.
- Convene the CCBP Council to strategize the best use of resources to prioritize mid- and larger-scale projects, to share experiences and lessons learned, and to track program metrics.
- Fund small- and mid-scale projects.
- Evaluate progress and, through the mechanism of the CCBP Council, adjust, as needed.

Community Capacity Building Program
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Community Capacity Building Program **$0**	**Community Capacity Building Program** **$15,000**	**Community Capacity Building Program** **$15,000**
• New program to begin in FY 2025.	• New program to begin in FY 2025. • Provide foundational funding to the Community Outreach Offices at the LPS to fund small-scale projects in the areas of increasing educational capacity, skills development, and employment engagement opportunities in under resourced and disadvantaged communities that surround the LPS. • Develop program metrics. • Stand up the CCBP Council • Program goals are to provide support and benefits through various means to those communities that have been affected by NNSA sites.	• Increase provides funding to stand up the program and fund small-scale projects in the areas of education, skills development, and employment engagement

Infrastructure and Operations

Overview

The Infrastructure and Operations program maintains, operates, and modernizes the National Nuclear Security Administration (NNSA) infrastructure in a safe, secure, and cost-effective manner to support all NNSA programs. Infrastructure and Operations efforts provide a comprehensive approach to modernizing NNSA infrastructure while maximizing return on investment, enabling program results, reducing the planetary impacts of the energy we use, and reducing enterprise risk. The program also plans, prioritizes, and constructs mission-enabling facilities and infrastructure.

Operations of Facilities

The Operations of Facilities program provides the funding required to operate NNSA facilities in a safe and secure manner. Operations of Facilities is fundamental to achieving NNSA's plutonium, uranium, tritium, lithium, high explosives, and other mission objectives. This program includes essential support such as water and electrical utilities; safety systems; lease agreements; and activities associated with Federal, state, and local environmental, worker safety, and health regulations.

Safety and Environmental Operations

The Safety and Environmental Operations program provides the Department's Nuclear Criticality Safety Program (NCSP), Nuclear Safety Research and Development (NSR&D), Packaging subprogram, Nuclear Materials Integration (NMI) subprogram, and a new Environmental Operations (EO) subprogram. The EO program consists of activities conducted under the Long-Term Stewardship (LTS) subprogram, as well as a subset of nuclear waste management and sitewide environmental impact statement activities previously funded under Operations of Facilities.

Maintenance and Repair of Facilities

The Maintenance and Repair of Facilities program (Maintenance) provides direct-funded maintenance activities across the NNSA enterprise for the recurring day-to-day work required to sustain and preserve NNSA facilities in a condition suitable for their designated purpose. These efforts include predictive, preventive, and corrective maintenance activities to maintain facilities, property, assets, systems, roads, and vital safety systems.

Recapitalization

The Recapitalization program (formerly Infrastructure and Safety) is key to modernizing NNSA's infrastructure. A sustained investment in Recapitalization is needed to address numerous obsolete support and safety systems; revitalize facilities that are beyond the end of their design life; and improve the reliability, efficiency, and capability of core infrastructure to meet mission requirements. The Recapitalization program modernizes NNSA infrastructure by prioritizing investments including the acquisition of new facilities or projects to improve the condition and extend the life of structures, capabilities, and systems thereby improving the safety and quality of the workplace. Recapitalization investments help achieve operational efficiencies and reduce safety, security, environmental, and program risk.

Line-Item Construction

Infrastructure and Operations line-item construction projects are critical to revitalizing the infrastructure. These projects will replace obsolete, unreliable facilities and infrastructure to reduce safety and program risk while improving responsiveness, capacity, and capabilities. NNSA uses a prioritization methodology for mission enabling line-item construction that evaluates investments on closing mission gaps, reducing infrastructure risk and safety risk, improving sustainability, and reducing deferred maintenance.

Infrastructure Modernization Initiative (IMI)

As part of the IMI, NNSA has deployed BUILDER, a system developed by the U.S. Army Corps of Engineers and recognized by the National Academy of Sciences as a best-in-class practice for infrastructure management. The BUILDER system uses comprehensive inventory, lifecycle, cost, and assessment data and risk-informed standards and policies to recommend repairs and replacements at the most opportune time, thus improving NNSA's ability to pinpoint and prioritize investments. Using BUILDER-based calculations provides a more accurate and transparent understanding of NNSA's infrastructure. Historical approaches had greatly underestimated the Replacement Plant Value (RPV) of NNSA's facilities (for example, RPV for Y-12's 9212 was historically $949 million and is now $4.7 billion). NNSA's new calculated RPV is $149.2

billion, of which $4.6 billion is excess facilities. The DM costs are tied to the RPV (it costs more to repair a more expensive facility); therefore, as expected, DM increased along with the value of the enterprise in FY 2023. NNSA's assessment of RPV and DM also included BUILDER-based calculations for Other Structure and Facilities (OSFs) for the first time in FY 2023. These calculations replaced less accurate, subjective data with BUILDER data and also drove changes in RPV and DM. The overall physical condition of NNSA's infrastructure did not decline. (Table 1)

As a result of our data-driven and risk-informed infrastructure tools, NNSA has transitioned from a financially driven (e.g., DM) to a risk-driven plan for improving infrastructure. While many of our projects will inherently reduce DM, DM reduction is not the primary metric driving project selection.

Table 1			
NNSA Deferred Maintenance (DM) as a Percentage of Replacement Plant Value (RPV) of Active Facilities			
Metric	**FY 2021**	**FY 2022**	**FY 2023**
DM	$6.1B	$6.5B	$7.7B
RPV	$121.5B	$131.0B	$144.5B
DM/RPV Ratio	5.00%	4.95%	5.30%
Note: DM & RPV totals exclude excess facilities and include KCNSC leased facilities			

In response to GAO recommendations, the following information is provided to improve transparency in the budget. Table 2 below lists total DM at NNSA sites, including a breakdown of that DM at different stages of facilities' design lives.

Table 2				
NNSA Deferred Maintenance (DM) as of FY 2023 (dollars in thousands) on Active and Excess Facilities				
Metric	**DM**	**% of Total DM**	**RPV**	**DM/RPV**
Total	7,770,903	100.00%	149,179,118	5.21%
Excess facilities	113,672	1.46%	4,632,886	2.45%
Facilities beyond their 40-year design life	6,034,654	77.66%	91,939,599	6.56%
Facilities within ten years of their 40-year design life	1,053,956	13.56%	21,527,045	4.90%
Facilities within the first 30 years of their 40-year design life	682,293	8.78%	35,712,474	1.91%

Approximately 90 percent of NNSA's DM is associated with facilities that are approaching or surpassed their 40-year design life. As part of a prudent investment strategy, NNSA will intentionally not perform some of the maintenance and repair on facilities with near-term replacement strategies or those that are or soon will become excess. NNSA is prioritizing its investments based on reducing mission risk, and it will take time and sustained investment in new construction to replace aged facilities and reverse operational risks from this legacy infrastructure.

NNSA annually screens excess facilities to identify the highest risks to mission, workers, the public, and the environment to support risk-informed decision making. Table 3 lists the highest-risk facilities.

Table 3				
NNSA's Highest-Risk Excess Facilities				
Site	**Owner**	**Facility**	**Year Built**	**Year Shut Down**
Y-12	NNSA	Alpha 5, Building 9201-05[a]	1944	1983
Y-12	NNSA	Beta 4, Building 9204-04 [a]	1945	2007
Y-12	SC	Beta 1, Fusion Energy-Eng Tech, Building 9204-01 [a]	1944	2011
Y-12	NNSA	Production, Building 9206 [a]	1944	1993
Y-12	NE	Beta 3, Isotope Separations, Building 9204-03[b]	1945	2016
LLNL	NNSA	Heavy Elements Facility, Building 251[a,c]	1956	1995
LLNL	EM	Livermore Pool-Type Reactor, Building 280[a,c]	1956	1980
LLNL	NNSA	Rotating Target Neutron Source Facility, Building 292[a]	1979	1987
LLNL	NNSA	Explosives & High-Pressure Testing, Building 343[a]	1960	2014
LANL	NNSA	Ion Beam Facility, Building TA-3-0016[a,c]	1953	1999

[a] Requires DOE EM to disposition.
[b] Beta 3, Isotope Separations, Building 9204-03 currently cannot be disposed (designated historical).
[c] Facilities for which disposition is currently funded and are in the process of being demolished.

Infrastructure and Operations
Non-Comparable Funding ($K)

	(Dollars in Thousands)				
	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted ($)	
				$	%
Infrastructure and Operations					
Operating					
Operations of Facilities	**1,038,000**	**1,038,000**	**1,305,000**	**+267,000**	**25.7%**
Safety and Environmental Operations	**162,000**	**162,000**	**191,958**	**+29,958**	**18.5%**
Maintenance and Repair of Facilities	**651,617**	**651,617**	**881,000**	**+229,383**	**35.2%**
Recapitalization[a]	**561,663**	**561,663**	**778,408**	**+216,745**	**38.6%**
Total, Operating	**2,413,280**	**2,413,280**	**3,156,366**	**+743,086**	**30.8%**
Construction					
Mission Enabling Construction					
25-D-511 PULSE New Access, NNSS	0	0	25,000	+25,000	0.0%
25-D-510 Plutonium Mission Safety & Quality Building, LANL	0	0	48,500	+48,500	0.0%
23-D-519 Special Materials Facility, Y-12	49,500	49,500	0	-49,500	100.0%
23-D-518 Plutonium Modernization Operations & Waste Management Office Building, LANL	48,500	48,500	0	-48,500	100.0%
23-D-517 Electrical Power Capacity Upgrade, LANL	24,000	24,000	70,000	+46,000	191.7%
22-D-514 Digital Infrastructure Capability Expansion, LLNL	67,300	67,300	0	-67,300	100.0%
Total, Mission Enabling Construction	**189,300**	**189,300**	**143,500**	**-45,800**	**24.19%**
Total, Infrastructure and Operations	**2,602,580**	**2,602,580**	**3,299,866**	**+697,286**	**26.8%**

[a] Recapitalization (formerly Infrastructure and Safety).

Infrastructure and Operations
Outyear Funding ($K)

	(Dollars in Thousands)			
	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Infrastructure and Operations				
Operating				
Operations of Facilities	**1,385,000**	**1,415,000**	**1,445,000**	**1,495,000**
Safety and Environmental Operations	**183,460**	**183,362**	**183,164**	**184,239**
Maintenance and Repair of Facilities	**900,000**	**910,000**	**935,000**	**975,000**
Recapitalization[a]	**771,404**	**793,095**	**826,223**	**960,576**
Total, Operating	**3,239,864**	**3,301,457**	**3,389,387**	**3,614,815**
Mission Enabling Construction				
29-D-XXX Protective Forces Support Facility, LANL	0	0	0	98,700
29-D-XXX Plutonium Engineering Support Building, LANL	0	0	0	98,700
28-D-XXX Plutonium Program Accounting Building, LANL	0	0	48,700	0
25-D-511 PULSE New Access, NNSS	90,000	90,000	90,000	0
23-D-517 Electrical Power Capacity Upgrade, LANL	120,000	0	0	0
Total, Construction	**210,000**	**90,000**	**138,700**	**197,400**
Total, Infrastructure and Operations	**3,449,864**	**3,391,457**	**3,528,087**	**3,812,215**

[a] Recapitalization (formerly Infrastructure and Safety).

Infrastructure and Operations
Comparable Funding ($K)

	(Dollars in Thousands)				
	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted ($)	
				$	%
Infrastructure and Operations					
Operating					
Operations of Facilities	**1,004,144**	**1,004,855**	**1,305,000**	**+300,856**	**30.0%**
Safety and Environmental Operations	**199,256**	**198,545**	**191,958**	**-7,298**	**3.7%**
Maintenance and Repair of Facilities	**651,617**	**651,617**	**881,000**	**+229,383**	**35.2%**
Recapitalization[a]	**558,263**	**558,263**	**778,408**	**+220,145**	**39.4%**
Total, Operating	**2,413,280**	**2,413,280**	**3,156,366**	**+743,086**	**30.8%**
Construction					
Mission Enabling Construction					
25-D-511 PULSE New Access, NNSS	0	0	25,000	+25,000	0.0%
25-D-510 Plutonium Mission Safety & Quality Building, LANL	0	0	48,500	+48,500	0.0%
23-D-519 Special Materials Facility, Y-12	49,500	49,500	0	-49,500	100.0%
23-D-518 Plutonium Modernization Operations & Waste Management Office Building, LANL	48,500	48,500	0	-48,500	100.0%
23-D-517 Electrical Power Capacity Upgrade, LANL	24,000	24,000	70,000	+46,000	191.7%
22-D-514 Digital Infrastructure Capability Expansion, LLNL	67,300	67,300	0	-67,300	100.0%
Total, Mission Enabling Construction	**189,300**	**189,300**	**143,500**	**-45,800**	**24.19%**
Total, Infrastructure and Operations	**2,602,580**	**2,602,580**	**3,299,866**	**+697,286**	**26.8%**

[a] Recapitalization (formerly Infrastructure and Safety).

	FY 2025 Budget Structure ($K)					
	Infrastructure and Operations					
	Operations of Facilities	Safety and Environmental Operations	Maintenance and Repair of Facilities	Recapitalization	Mission Enabling Construction	Total
FY 2024 Budget Structure						
Infrastructure and Operations						
Operating						
Operations of Facilities	1,305,000	35,500	0	0	0	1,340,500
Safety and Environmental Operations	0	153,058	0	0	0	153,058
Maintenance and Repair of Facilities	0	0	881,000	0	0	881,000
Recapitalization	0	3,400	0	778,408	0	781,808
Total, Operating	**1,305,000**	**191,958**	**881,000**	**778,408**	**0**	**3,156,366**
Construction						
Mission Enabling Construction	0	0	0	0	0	0
25-D-511 PULSE New Access, NNSS	0	0	0	0	25,000	25,000
25-D-510 Plutonium Mission Safety & Quality Building, LANL	0	0	0	0	48,500	48,500
23-D-519 Special Materials Facility, Y-12	0	0	0	0	0	0
23-D-518 Plutonium Modernization Operations & Waste Management Office Building, LANL	0	0	0	0	0	0
23-D-517 Electrical Power Capacity Upgrade, LANL	0	0	0	0	70,000	70,000
22-D-514 Digital Infrastructure Capability Expansion, LLNL	0	0	0	0	0	0
Total, Mission Enabling Construction	**0**	**0**	**0**	**0**	**143,500**	**143,500**
Total, Infrastructure and Operations	**1,305,000**	**191,958**	**881,000**	**778,408**	**143,500**	**3,299,866**

Infrastructure and Operations
Explanation of Changes ($K)

	FY 2025 Request vs FY 2023 Enacted
Infrastructure and Operations	
Operating	
Operations of Facilities: The increase supports operations needs to keep pace with increased programmatic mission tempo across the nuclear security enterprise, including 24/7 operations at LANL to achieve a 30 pits per year (PPY) capacity, and additional operations at the expanded Kansas City National Security Campus. In addition, includes funding for activities previously funded through the Defense Environmental Cleanup appropriation to enable operations of facilities at the Savannah River Site (SRS), including those at K-area. Funding is also included to begin transitioning SRS to an enduring mission site. This increase is partially offset by a realignment in scope and funding to the Safety and Environmental Operations program.	**+267,000**
Safety and Environmental Operations: The increase reflects the realignment of scope and funding for the Safety, Analytics, & Forecasting, Evaluation Reporting (SAFER) platform, Site Wide Environmental Impact Statement (SWEIS) activities, and Radioactive Waste Management (RWM) reserve funding from Operations of Facilities. The increase also includes additional funds to support Ogallala Aquifers at Pantex and efforts to help with criticality prevention in Fukushima fuel debris removal efforts. The LTS subprogram is being restructured and renamed Environmental Operations to encompass the existing Long-Term Stewardship scope and the realigned scope and funding from Operations of Facilities.	**+29,958**
Maintenance and Repair of Facilities: The increase supports the LANL Pu 30 PPY mission and additional maintenance of facilities at KCNSC. In addition, the increase will: address deferred maintenance across the enterprise including work at the NNSS for site critical infrastructure – such as the Principal Underground Laboratory for Subcritical Experimentation or PULSE (formerly the U1a Complex), other mission facilities and targeted support for global security needs; and address highest risks in deferred maintenance at Y-12 and Pantex. Funding is also included to begin transitioning SRS to an enduring mission site.	**+229,383**
Recapitalization: The increase supports the Kansas City Non-Nuclear Expansion Transformation (KC NExT), and the deactivation and disposal of excess infrastructure, including stabilization and risk reduction activities at high-risk facilities. The increase also reflects the realignment of scope for the acquisition, sustainment, and disposal of DOE owned federal Field Office space from the Federal Salaries and Expenses account. Funding is also included to begin transitioning SRS to an enduring mission site.	**+216,745**
Total, Operating	**+743,086**

	FY 2025 Request vs FY 2023 Enacted
Construction	
Mission Enabling Construction: Decrease due to fully funded projects in FY 2023: Special Materials Facility, Y-12; Digital Infrastructure Capability Expansion, LLNL; and Plutonium Modernization Operations & Waste Management, LANL. Offset by new starts for the Plutonium Mission Safety & Quality Building at LANL and PULSE New Access project (formerly U1a Complex) at NNSS. Continues construction for the Electrical Power Capacity Upgrade project at LANL.	
Total, Construction	**-45,800**
Total, Infrastructure and Operations	**+697,286**

Infrastructure and Operations
Operations of Facilities

Description
The Operations of Facilities program provides the funding required to operate NNSA facilities in a safe manner. Operations of Facilities is fundamental to achieving NNSA's plutonium, uranium, tritium, lithium, high explosives, and other mission objectives. It includes essential support such as water and electrical utilities, safety systems, lease agreements for facilities and land, emergency response services, and other critical systems. This program also provides resources for environment, safety, health, and quality (ESH&Q) costs associated with ensuring compliance with Federal, state, and local environmental, worker safety, and health regulations as well as applicable DOE Orders and Directives.

The Operations of Facilities program also funds facility waste management activities, including treatment, storage, and waste disposition of both hazardous and newly generated radiological wastes. It provides for the daily operations and staffing to ensure facilities, systems, and capabilities are available to meet mission requirements.

The following scope transfers to the Safety and Environmental Operations account in FY 2025.

- Site Wide Environmental Impact Studies (SWEIS)
- Safety Analytics, Forecasting, Evaluation, and Reporting (SAFER)
- Waste management reserve

Funding for facility waste operations and treatment remains within Operations of Facilities. This includes systems and equipment needed to support operations.

FY 2023-FY 2029 site allocations for the Operations of Facilities program are provided in Table 4 below.

Table 4

Site	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Kansas City National Security Campus	90,000	81,000	109,000	118,000	128,000	139,000	150,000
Lawrence Livermore National Laboratory	82,000	80,000	100,000	105,000	106,000	106,000	112,000
Los Alamos National Laboratory	320,000	325,000	455,000	472,000	489,000	503,000	511,000
Nevada National Security Site	105,000	100,000	117,000	117,000	118,000	120,000	122,000
Pantex Plant	83,000	80,000	90,000	90,000	93,000	95,000	98,000
Sandia National Laboratories	106,000	95,000	113,000	115,000	113,000	116,000	120,000
Savannah River Site	95,000	90,000	179,000	182,000	185,000	186,000	188,000
Savannah River National Laboratory	0	0	0	0	0	0	0
Y-12 National Security Complex	104,000	102,000	118,000	124,000	125,000	135,000	145,000
Headquarters[a]	53,000	85,000	24,000	62,000	58,000	45,000	49,000
TOTAL	**1,038,000**	**1,038,000**	**1,305,000**	**1,385,000**	**1,415,000**	**1,445,000**	**1,495,000**

[*] The Operations of Facilities allocation under "Headquarters" includes funding to quickly respond to emergent unforeseeable issues. Funding is distributed to the sites during execution, which is consistent with industry best practices.

Operations of Facilities
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Operations of Facilities $1,038,000,000	**Operations of Facilities $1,305,000,000**	**Operations of Facilities +$267,000,000**
Funding supported base facility operations at: • Kansas City National Security Campus (KCNSC), supported non-nuclear production. • Lawrence Livermore National Laboratory (LLNL), supported plutonium, tritium, and high explosive nuclear security enterprise missions. • LANL, supported plutonium production, including pit production, research, and development; chemistry and metallurgy research; weapons engineering and tritium capability; and beryllium operations. • NNSS, including experimental capabilities. • Pantex, including industrial and high explosives to support weapon assembly, disassembly, and surveillance in support of Stockpile Management (SM). • Sandia National Laboratories (SNL), including environmental testing and microelectronics technologies facilities. • Savannah River Site (SRS), including tritium and other capabilities. • Y-12, for enriched and depleted uranium, lithium, and other special material operations. • Headquarters (HQ), the SAFER platform to support enterprise-wide risk management applications.	Funding supports base facility operations at: • KCNSC, supporting non-nuclear production. • Lawrence Livermore National Laboratory (LLNL), supporting plutonium, tritium, and high explosive nuclear security enterprise missions. • LANL, supporting plutonium production, including pit production, research, and development; chemistry and metallurgy research; weapons engineering and tritium capability; and beryllium operations. • NNSS, operations at Joint Actinide Shock Physics Experimental Research (JASPER), Big Explosives Experimental Facility (BEEF), Device Assembly Facility (DAF), and PULSE (formerly U1a Complex) including experimental capabilities. • Pantex, including industrial and high explosives to support weapon assembly, disassembly, and surveillance in support of Stockpile Management. • SNL, including environmental testing and microelectronics technologies facilities. • SRS, including tritium and other capabilities. Includes those facilities as part of the SRS transition from EM to NNSA • Y-12, for enriched and depleted uranium, lithium, and other special material operations.	• Increase supports operations needs to keep pace with increased programmatic mission tempo across the nuclear security enterprise. • Increase supports 24/7 operations at LANL to meet 30 PPY. • Provides funding for the operations of facilities for KC expansion. • Includes operations funding previously funded in Defense Environmental Cleanup for SRS. Funding is also included to begin transitioning SRS to an enduring mission site. • Increase is partially offset by a realignment in scope and funding to the Safety and Environmental Operations program.

Infrastructure and Operations
Safety and Environmental Operations

Description

The Safety and Environmental Operations (SEOPs) program includes a suite of activities that crosscut the various missions within NNSA. These include -the direct funded activities such as the Department's Nuclear Criticality Safety Program (NCSP) and Nuclear Safety Research. They also include operational activities such as Nuclear Packaging and Transportation, Nuclear Materials Integration (NMI), sustainability and environmental programs. These activities form elemental building blocks used by the line organizations to implement their missions. The tools SEOPs uses to accomplish its mission including data and information management tools such as Safety, Analytics, Forecasting and Evaluation Reporting (SAFER) and the Nuclear Materials Management and Safeguard System (NMMSS), waste optimization studies, environmental impact studies and statements, and through the development and implementation of annual radioactive waste processing and sustainability program plans. SEOPs provides reasoned, concrete solutions to meet NNSA's safety and environmental challenges. SEOPs also contributes to the Administration's Justice40 Initiative by protecting worker and public health and the environment at the NNSA LTS sites and the surrounding areas to include disadvantaged communities, by preventing inappropriate exposure to legacy pollution. Table 5 provides the funding breakout for these subprograms.

Table 5

Subprogram	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Nuclear Criticality Safety Program	29,080	29,080	31,141	29,089	29,089	29,087	29,096
Nuclear Safety Research and Development	3,418	3,418	3,159	3,153	3,153	3,153	2,527
Packaging	24,986	24,986	23,259	23,090	23,152	23,115	23,713
Environmental Operations[a]	75,021	75,021	109,438	103,272	103,268	103,262	102,345
Nuclear Materials Integration	29,495	29,495	24,961	24,856	24,700	24,547	26,558
TOTAL	**162,000**	**162,000**	**191,958**	**183,460**	**183,362**	**183,164**	**184,239**

[a] New Subprogram created as a result of the restructuring of SEOPs and Operations of Facilities. The Subprogram will contain the existing Long-Term Stewardship, Waste Management Reserve, and Environmental Protection activities.

Safety and Environmental Operations
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Safety and Environmental Operations $162,000,000	**Safety and Environmental Operations $191,958,000**	**Safety and Environmental Operations +$29,958,000**
Nuclear Criticality Safety Program $29,080,000	**Nuclear Criticality Safety Program $31,141,000**	**Nuclear Criticality Safety Program $2,061,000**
• Provided technical infrastructure, expertise, and experimentation capabilities for the DOE encompassing the following technical elements: Nuclear Data, Analytical Methods, Training & Education, Information Preservation and Dissemination, and Integral Experiments. Integral experiments included the NCSP's NCERC to ensure criticality safety capabilities are adequate for the DOE mission.	• Provide technical infrastructure, expertise, and experimentation capabilities for the DOE encompassing the following technical elements: Nuclear Data, Analytical Methods, Training & Education, Information Preservation and Dissemination, and Integral Experiments. Integral experiments included the NCSP's NCERC to ensure criticality safety capabilities are adequate for the DOE mission. NCSP will develop and execute a five-year plan to partner with relevant Japanese organizations to help improve technical capabilities related to real-time monitoring and analysis to help with fuel debris removal efforts during decommissioning of the Fukushima Daiichi nuclear power plant, with a focus on preventing an inadvertent criticality accident	• Increase to support criticality analysis for Fukushima debris removal.
Nuclear Safety Research and Development $3,418,000	**Nuclear Safety Research and Development $3,159,000**	**Nuclear Safety Research and Development -$259,000**
• Conducted projects to provide the technical foundation for safety analyses and controls as well as authorization basis decision making for DOE/NNSA nuclear facilities and associated operations.	• Conduct projects to provide the technical foundation for safety analyses and controls as well as authorization basis decision making for DOE/NNSA nuclear facilities and associated operations.	• No significant changes.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Packaging $24,986,000	**Packaging $23,259,000**	**Packaging -$1,727,000**
• Refurbished, reconditioned, maintained, replaced, and certified containers to ensure availability to support the nuclear weapons mission.	• Refurbish, recondition, maintain, replace, and certify containers to ensure availability to support the nuclear weapons mission.	• The decrease reflects the use of available carryover.
Environmental Operations $75,021,000	**Environmental Operations $109,438,000**	**Environmental Operations $34,417,000**
• Subprogram restructured and renamed Environmental Operations to realign scope and funding in FY 2025. • Supported Long-Term Stewardship (LTS) regulatory required activities at the Kansas City Plant (located on the former Bannister Federal Complex), LLNL (Main Site and Site 300), Pantex Plant, SNL, and Y-12. • LTS required activities included: treating contaminated ground water (including the Pantex offsite groundwater contamination plume); monitoring surface/ground water and soils; maintaining landfill remedies; performing CERCLA and RCRA 5-year remedy reviews of selected cleanup remedies; working with the Environmental Protection Agency regions and various states to meet post-completion regulatory cleanup and reporting requirements; addressing potential vapor intrusion studies and remedial activities, and working in concert with other federal agencies, states, and affected stakeholders to execute LTS activities in a cost effective, compliant, and safe manner consistent with end states.	• Subprogram is being restructured and renamed Environmental Operations in FY 2025 to realign scope and funding. • Continue to support LTS regulatory required activities at Kansas City Plant (located on the former Bannister Federal Complex), LLNL (Main Site and Site 300), Pantex Plant, SNL, and Y-12. • LTS required activities include: treating contaminated ground water (including the Pantex offsite groundwater contamination plume); monitoring surface/ground water and soils; maintaining landfill remedies; performing CERCLA and RCRA 5-year remedy reviews of selected cleanup remedies; working with the Environmental Protection Agency regions and various states to meet post-completion regulatory cleanup and reporting requirements; addressing potential vapor intrusion studies and remedial activities, and working in concert with other federal agencies, states, and affected stakeholders to execute LTS activities in a cost effective, compliant, and safe manner consistent with end states. • Headquarters (HQ), the SAFER platform to support enterprise-wide risk management applications. • SWEIS will support the development of site-wide environmental impact statements as required by	• The increase reflects the reallocation of scope and funding from Operations of Facilities as well as additional funding to LTS to support Pantex' Ogallala Aquifer efforts.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
	environmental regulations. Sites supported include NNSS, LANL, LLNL, Pantex, SNL, and Y-12. • RWM reserve will conduct waste optimization studies.	
Nuclear Materials Integration $29,495,000	**Nuclear Materials Integration $24,961,000**	**Nuclear Materials Integration -$4,534,000**
• Maintained and operated the NMMSS for the United States Government. • Completed processing sodium bonded fuels at Idaho National Laboratory (INL) originally used at SNL. • Planned and implemented activities to recover Pu-244 from the Mk-18a target assemblies at SRS. • Treated, consolidated, and disposed of inactive actinides no longer needed for nuclear security missions at Oak Ridge National Laboratory (ORNL), LANL, and Y-12. • Ensured program direction and management of nuclear materials is effectively executed at each of the site offices. • Provided long-term forecasting, planning and analysis of materials. • Supported the emphasis on nuclear material consolidation and de-inventory activities across the NNSA nuclear security enterprise. • Continued activities to remove plutonium-bearing mixed oxide fuel.	• Continue to maintain and operated the NMMSS for the United States Government. • Continue plan and implement activities to recover Pu-244 from the Mk-18a target assemblies at SRS. • Continue to treat, consolidate, and dispose of inactive actinides no longer needed for nuclear security missions at Oak Ridge National Laboratory (ORNL), LANL, and Y-12. • Continue to monitor and ensure program direction and management of nuclear materials is effectively executed at each of the site offices. • Continue to provide long-term forecasting, planning and analysis of materials. • Continue to support the emphasis on nuclear material consolidation and de-inventory activities across the NNSA nuclear security enterprise. • Continue activities to remove plutonium-bearing mixed oxide fuel.	• The decrease reflects the use of available carryover.

Infrastructure and Operations
Maintenance and Repair of Facilities

Description
The Maintenance and Repair of Facilities program provides direct-funded maintenance activities across the NNSA enterprise, including DOE owned federal Field Office space, for the recurring day-to-day work required to sustain and preserve facilities and equipment in a condition suitable for their designated purpose. These efforts include predictive, preventive, and corrective maintenance activities to maintain facilities, property, assets, systems, roads, and vital safety systems. This program also funds maintenance of excess facilities (including high-risk excess facilities) necessary to minimize the risk posed by those facilities prior to disposition.

Maintenance and Repair of Facilities is prioritized within an enterprise risk management framework based on mission needs; probability of failure of a system or a component; and risk determination regarding safety, security, and environmental requirements. Investments focus on those structures, systems, and components that are considered essential to the national security mission. FY 2023-FY 2029 Infrastructure and Operations site allocations for direct-funded maintenance are provided in Table 6 below.

This program also funds the Roof Asset Management Program (RAMP) and the Cooling and Heating Asset Management Program (CHAMP). RAMP provides a dedicated approach to managing roofing assets through a single prioritized list of roofing needs across the nuclear security enterprise. The successful RAMP methodology has been expanded to other common components/systems under the Asset Management Program (AMP). Other systems will be analyzed as possible AMPs to achieve additional efficiencies.

Table 6

Site	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Kansas City National Security Campus	22,000	22,000	38,000	43,000	49,000	56,000	62,000
Lawrence Livermore National Laboratory	37,000	35,000	44,000	46,000	48,000	49,000	50,000
Los Alamos National Laboratory	145,000	151,000	212,000	215,000	216,000	217,000	221,000
Nevada National Security Site	70,000	75,000	100,000	105,000	106,000	108,000	118,000
Pantex Plant	108,000	102,000	120,000	125,000	126,000	126,000	127,000
Sandia National Laboratories	24,000	20,000	30,000	34,000	34,000	35,000	36,000
Savannah River Site	40,000	36,000	77,000	77,000	79,000	80,000	82,000
Savannah River National Laboratory	0	0	0	0	0	0	0
Y-12 National Security Complex	119,000	115,000	132,000	139,000	140,000	149,000	161,000
Enterprise Acquisitions[a]	86,617	95,617	128,000	116,000	112,000	115,000	118,000
TOTAL	**651,617**	**651,617**	**881,000**	**900,000**	**910,000**	**935,000**	**975,000**

[a] The Maintenance and Repair of Facilities allocation under "Enterprise Acquisitions" includes funding for Asset Management Programs, which achieve economies of scale and maintenance standardization for critical building systems that are common across the enterprise (e.g., roofs, HVAC) and to quickly respond to emergent unforeseeable issues. Funding is distributed to the sites during execution, which is consistent with industry best practices.

Maintenance and Repair of Facilities
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Maintenance and Repair of Facilities $651,617,000	**Maintenance and Repair of Facilities $881,000,000**	**Maintenance and Repair of Facilities +$229,383,000**
• KCNSC: maintenance for Main Campus and Building 23. • LLNL: maintenance activities at Contained Firing Facility, Superblock, High Explosive Application Facility (HEAF), machine shops, and waste management facilities. • LANL: maintenance activities at Plutonium Facility 4 (PF-4), Chemistry and Metallurgy Research (CMR), Dual-Axis Radiographic Hydrodynamic Test Facility (DARHT), Los Alamos Neutron Science Center (LANSCE), Beryllium, waste management, radiological laboratory, and tritium facilities. • NNSS: maintenance of Joint Actinide Shock Physics Experimental Research (JASPER), Big Explosives Experimental Facility (BEEF), Device Assembly Facility (DAF), and PULSE (formerly U1a Complex). • Pantex: Bays and Cell maintenance, funded emerging requirements, and support high explosives activities. • SNL: maintenance activities at Microsystems Engineering, Science and Applications (MESA), Major Environmental Test Facilities (METF), and Tonopah. • SRS: maintenance on NNSA mission facilities and activities associated with gas transfer systems. • Y-12: maintenance for uranium and lithium operations.	• KCNSC: Above standard maintenance for main campus and Building 23. • LLNL: maintenance activities at Site 300, Superblock, HEAF, National Ignition Facility (NIF), machine shops, and waste management facilities. • LANL: maintenance activities at PF-4, CMR, DARHT, LANSCE, Beryllium, waste management, radiological laboratory, and tritium facilities. • NNSS: maintenance of JASPER, BEEF, DAF, and PULSE (formerly U1a Complex). • Pantex: Bays and Cell maintenance, funded emerging requirements, and support high explosives activities. • SNL: maintenance activities at MESA, METF, and Tonopah. • SRS: maintenance on NNSA mission facilities, including activities associated with gas transfer systems and maintenance of those facilities as part of the SRS transition from EM to NNSA Funding is also included to begin transitioning SRS to an enduring mission site. • Y-12: maintenance for uranium and lithium operations. • Funding for Asset Management Programs and maintenance of Field Offices. • Provide for enterprise-wide activities to stabilize the condition of excess facilities to minimize risk to mission prior to disposition.	• Increase supports achieving 30 PPY at LANL and provides funding for the maintenance of facilities for KC expansion. • Increases will address deferred maintenance across the enterprise including work at the NNSS for site critical infrastructure – such as PULSE (formerly the U1a Complex), other mission facilities and targeted support for global security needs; address highest risks in deferred maintenance at Y-12 and Pantex; and maintain current levels of execution. • Funding is also included to begin transitioning SRS to an enduring mission site.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
• Enterprise-wide: RAMP and CHAMP centralized procurement activities to increase buying power and accelerate repairs of systems/components that are common across the NNSA enterprise. • Provided for enterprise-wide activities to stabilize the condition of excess facilities to minimize risk to mission prior to disposition.		

Infrastructure and Operations
Recapitalization

Description

The Recapitalization program (formerly Infrastructure and Safety), key to modernizing NNSA infrastructure, prioritizes investments to improve the condition and extend the design life of the structures, capabilities, and/or systems which improves the reliability, sustainability, productivity, and efficiency of NNSA's infrastructure to reduce overall operating costs. It also reduces safety, environmental, and program risk associated with facilities and systems that are often well beyond their design life.

The Recapitalization program includes costs for minor construction projects, real property purchases, projects that are expensed, general contract support for construction project management, and Other Project Costs (OPC) for mission enabling infrastructure line-item construction projects. Recapitalization also funds deactivation and disposal of excess infrastructure, including stabilization and risk reduction activities at high-risk excess facilities, resulting in surveillance and maintenance cost avoidance and reduced risk to workers, the public, environment, and programs. Recapitalization projects incorporate energy conservation measures to the greatest extent practicable in support of sustainability and energy performance improvements.

Tables 7 show the plans for Recapitalization projects to be executed with FY 2025 funding based on the status of enterprise infrastructure as of February 2024. This plan may need to be updated before the FY 2025 execution year to respond to changing infrastructure conditions and requirements.

Table 7

National Nuclear Security Administration Recapitalization Planned FY 2025 Recapitalization Projects - As of February 2024		
Site	**Project Name**	**FY 2025 Allocation ($K)**
KC	Bldg 23 North Additive Manufacturing Expansion Buildout (Minor Construction)	13,102
	Bldg 23 North Manufacturing Support Buildout (Minor Construction)	10,806
	Bldg 23 North Non-Destructive Testing & Environmental Lab Buildout (Minor Construction)	14,649
	Bldg 23 North Surveillance Production Activities Expansion Buildout (Minor Construction)	12,914
Subtotal, Kansas City National Security Campus		**51,471**
LLNL	Bldg 411 Shipping and Receiving Seismic Upgrade [Design] (Minor Construction)	915
	New Bldg 296 Energetic Materials Office Facility (STAR) (Minor Construction)	27,875
	New Bldg 420 Maintenance Shops Facility [Design] (Minor Construction)	1,100
	Site 200 CW01 Mocho Hetch Hetchy Pump Station Revitalization [Design]	855
	Site 200 Mechanical Utility Third Tier Valve and Piping Replacement	5,300
	U291 Cooling Tower Upgrade (Minor Construction)	18,150
Subtotal, Lawrence Livermore National Laboratory		**54,195**
LFO	Bldg 311 OIG Wing Conversion (Minor Construction)	1,200
	Bldg 311 HVAC Upgrade (Minor Construction)	12,930
Subtotal, Livermore Field Office		**14,130**
LANL	PF-4 South 13.2kV Switchgear Replacement [Design]	1,659
	WETF Redundant Fire Loop Installation [Design] (Minor Construction)	1,283
	RLWTF Clarifier Number 2 Stabilization	7,391
	SM-39 Window Replacement (Minor Construction)	10,120
	TA-16 WETF Redundant Fire Detection Installation (Minor Construction)	3,847
	CMR Wings 9 Nuclear Material Decontamination and Non-Fixed Item Removal	2,300
	CMR Wings 2 and 4 Final Transition Requirements for Enduring Surveillance	4,100
	PHERMEX Firing Point Deinventory Zone 4	3,000
Subtotal, Los Alamos National Laboratory		**33,700**

NNSA implements climate adaptation & resilience improvements throughout its infrastructure modernization portfolio. The projects identified above are those that improve site sustainability and reliability performance through either targeted investments or larger projects that also address mission & safety risk reduction.

National Nuclear Security Administration Recapitalization Planned FY 2025 Recapitalization Projects - As of February, 2024		
Site	**Project Name**	**FY 2025 Allocation ($K)**
NNSS	New Area 23 Mercury Solar PV & Storage (ERICA) (Minor Construction)	20,200
	DAF Workplace Upgrade [Design] (Minor Construction)	1,600
	RNCTEC & Substation Watershed Drainage Upgrades [Design] (Minor Construction)	500
	DAF Area Watershed Drainage Upgrades [Design] (Minor Construction)	900
	PULSE (formerly U1a Complex) Centralized Monitor and Control Center Installation (Minor Construction)	10,300
	Area 6 Fleet Compound Water Line Replacement [Design]	2,100
	Disposition of 13 Buildings in Areas 1, 5A, 12, 15, and 23	3,100
Subtotal, Nevada National Security Site		**38,700**
PX	Bay & Cell FDS, & Lead-In Improvements Portfolio	18,300
	Bay & Cell RAMS Replacement Portfolio	10,100
	Bldg 11-55 Toxic Vapor Monitoring System Replacement	4,350
	Bldg 15-33 Pump House and Tank Upgrades (Minor Construction)	6,850
	South Main Substation Switchgear, Capacitor Bank, & Controller Upgrade - 100 Circuit (Minor Construction)	10,725
	MAA Facilities Catenary Lightning Protection System Disposition	10,700
	Bldg 12-063 Complex Disposition (12-063, 12-063A, 12-063E, 12-063E1, 12-063E2, 12-R-063, 12-R-063A)	6,900
Subtotal, Pantex Plant		**67,925**
SNL	CA Electrical Substation 41, 42, 43 & 44 Upgrades (Minor Construction)	6,800
	MESA ELP Bldg 858N Hazardous Production Materials (HPM) Monitoring System/Midas Upgrade (Minor Construction)	3,350
	New C964 Microgrid (ERICA) (Minor Construction)	17,500
	TA-III, V, & Remotes 5kV Substation Replacement (Minor Construction)	10,550
	New CA Secure Weapons Integration Center [Design](Minor Construction)	2,600
	MESA ELP Bldg 858N Pressure Cascade Control Upgrade (Minor Construction)	3,206
	Burn Site Electrical Upgrade (Minor Construction)	5,374
	Substation 41 Replacement [Design/LLE] (Minor Construction)	7,000
	New Production Storage Facility [Design] (Minor Construction)	975
	Weapons Evaluation and Testing Laboratory (WETL) Addition - Lab & Office Space (Minor Construction)	13,000
Subtotal, Sandia National Laboratories		**70,355**
SRS	F Area Domestic Water System Upgrades (Minor Construction)	7,718
	F Area Service Water Upgrades (Minor Construction)	13,892
Subtotal, Savannah River Site		**21,610**

NNSA implements climate adaptation & resilience improvements throughout its infrastructure modernization portfolio. The projects identified above are those that improve site sustainability & reliability performance through either targeted investments or larger projects that primarily address mission & safety risk reduction.

National Nuclear Security Administration Recapitalization Planned FY 2025 Recapitalization Projects - As of February, 2024		
Site	**Project Name**	**FY 2025 Allocation ($K)**
Y-12	Bldg 9204-02 Switchgear 810 Replacement (Minor Construction)	4,843
	Bldg 9720-32 Facility Conversion (Minor Construction)	12,423
	Bldg 9998 H2 Supply Fans H2-3 and H2-4 Revitalization - UESC (Minor Construction)	13,356
	Bldg 9204-02E South Fire and Potable Water Laterals Replacement (Minor Construction)	1,700
	Bldg 9998 Supply Fan H2-1 Replacement - UESC [Design]	908
	Bldg 9720-17 Disposition	4,000
	Bldg 9401-03 Steam Plant Preparation for Demolition	36,700
	Bldg 9706-02 Complex Disposition (9706-02, 9722-02) (EOC D&D)	4,700
Subtotal, Y-12 National Security Complex		**78,630**
	Planning, Assessments, Infrastructure Management Tools, and Purchases	344,957
	Construction Other Project Costs (OPC)	2,735
Grand Total, Recapitalization		**778,408**

NNSA implements climate adaptation & resilience improvements throughout its infrastructure modernization portfolio. The projects identified above are those that improve site sustainability & reliability standards through either targeted investments or larger projects that primarily address mission & safety risk reduction.

Recapitalization
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Recapitalization $561,663,000	**Recapitalization $778,408,000**	**Recapitalization +$216,745,000**
• Provided funds for needed investments in obsolete/aging facilities and infrastructure to improve safety, reliability, and working condition. • NNSA established the Energy Resilient Infrastructure and Climate Adaptation (ERICA) initiative in FY 2023 as part of a comprehensive infrastructure modernization strategy. ERICA is part of NNSA's multi-faceted approach to address climate adaptation and resilience in direct- and indirect-funded infrastructure programs and alternative financing (i.e., Energy Savings Performance Contracts, Utility Energy Service Contracts, and Utility Service Agreements).	• Table 7 contains the current FY 2025 project plan as of February 2024. The table includes advanced funding for design of several complex, high priority projects for future year execution. Recapitalization funds are allocated in accordance with planned priorities but retain the flexibility to adjust efforts to address emerging changes in priorities and unplanned failures.	• Support for the KC NExT. • Deactivation and disposal of excess infrastructure, including stabilization and risk reduction activities at high-risk facilities. • Realignment of scope for the acquisition, sustainment, and disposal of DOE-owned federal Field Office space from the FSE account. • Funding is also included to begin transitioning SRS to an enduring mission site.

Infrastructure and Operations
Construction

The Construction program plays a critical role in revitalizing the nuclear security enterprise. Investments from this program will improve the responsiveness and utility of the infrastructure. The program is focused on two primary objectives: (1) identification, planning, and prioritization of the projects supporting national security objectives, and (2) development and timely and efficient execution of these projects. Table 8 shows the breakout of funding by line-item.

FY 2025 funding will support the design efforts for the PULSE New Access project (formerly U1a Complex) at NNSS. The project will provide reliable underground access for larger experimental vessels as well as the additional staff required to operate multiple testbeds at the PULSE facility in support of the nuclear security enterprise's maintenance and certification programs of the NNSA Defense Programs' Stockpile Stewardship Program.

FY 2025 funding will support the Plutonium Mission Safety & Quality Building within the Pajarito Corridor. The facility will provide workstations and conference rooms to support environmental safety & health services, environmental regulatory compliance, industrial hygiene, radiation control, health physics, quality control, and instrument calibration.

FY 2025 funding will continue to support construction for the Electrical Power Capacity Upgrade project at LANL. The project will increase the LANL electrical transmission system capacity and the LANL distribution system capacity and redundancy. Current transmission/distribution capacity is insufficient to provide stable and reliable power supply essential to all future programmatic missions at LANL.

Table 8

Project	FY 2023 Enacted	FY 2024 Annualized CR	FY 2024 Request	FY 2025 Request	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Mission Enabling Construction								
29-D-XXX, Plutonium Engineering Support Building, LANL	0	0	0	0	0	0	0	98,700
29-D-XXX, Protective Forces Support Facility, LANL	0	0	0	0	0	0	0	98,700
28-D-XXX, Plutonium Program Accounting Building, LANL	0	0	0	0	0	0	48,700	0
25-D-511, PULSE New Access, NNSS	0	0	0	25,000	90,000	90,000	90,000	0
25-D-510, Plutonium Mission Safety & Quality Building, LANL	0	0	0	48,500	0	0	0	0
24-D-512, TA-46 Protective Force Facility, LANL	0	0	48,500	0	0	0	0	0
24-D-511, Plutonium Production Building, LANL	0	0	48,500	0	0	0	0	0
24-D-510, Analytic Gas Laboratory, PX	0	0	35,000	0	0	0	0	0
23-D-519, Special Materials Facility, Y-12	49,500	49,500	0	0	0	0	0	0
23-D-518, Plutonium Modernization Operations & Waste Management Office Building, LANL	48,500	48,500	0	0	0	0	0	0
23-D-517, Electrical Power Capacity Upgrade, LANL	24,000	24,000	75,000	70,000	120,000	0	0	0
22-D-514, Digital Infrastructure Capability Expansion, LLNL	67,300	67,300	0	0	0	0	0	0
Total, Mission Enabling Construction	**189,300**	**189,300[a]**	**207,000**	**143,500**	**210,000**	**90,000**	**138,700**	**197,400**

[a] Special Materials Facility, Y-12, Plutonium Modernization Operations & Waste Management Office Building, LANL, and Digital Infrastructure Capability Expansion, LLNL are fully funded and not receiving funding under the CR.

Construction
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Mission Enabling Construction $189,300,000	**Mission Enabling Construction $143,500,000**	**Mission Enabling Construction -$45,800,000**
• Transitioned to construction for the Digital Infrastructure Capability Expansion (DICE) project at LLNL. • Initiated design for the Electrical Power Capacity Upgrade project at LANL. • Initiated the Plutonium Modernization Operations & Waste Management Office Building at LANL. • Initiated the Special Materials Facility at Y-12 National Security Complex.	• Initiate the Plutonium Mission Safety & Quality Building at LANL. • Initiate the PULSE New Access project (formerly U1a Complex) at NNSS. • Continue construction for the Electrical Power Capacity Upgrade project at LANL.	• Decrease due to fully funded projects in FY 2023: Special Materials Facility, Y-12; Digital Infrastructure Capability Expansion, LLNL; and Plutonium Modernization Operations & Waste Management, LANL. • Offset by new starts for the Plutonium Mission Safety & Quality Building at LANL and PULSE New Access project (formerly U1a Complex) at NNSS, and construction for the Electrical Power Capacity Upgrade project at LANL.

25-D-510, Plutonium Mission Safety & Quality Building
Los Alamos National Laboratory (LANL), Los Alamos, New Mexico
Project is for Design and Construction

1. Summary, Significant Changes, Schedule and Cost History

Summary

The FY 2025 Request for the Plutonium Mission Safety & Quality Building project is $48,500,000. The current Total Project Cost (TPC) range is $46,000,000 to $50,000,000. The FY 2025 request fully funds all design and construction activities required for this project. Design is to be completed in FY 2025.

The Plutonium Mission Safety & Quality Building project will support environmental safety & health services, environmental regulatory compliance, industrial hygiene, radiation control, health physics, quality control, and instrument calibration at Los Alamos National Laboratory (LANL).

On October 13, 2017, the Deputy Secretary exempted non-nuclear, non-complex line-item construction projects with a Total Project Cost (TPC) less than $50 million from the requirements of the Department of Energy's (DOE) Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets,* which offered an opportunity to develop a new delivery model for line-item projects above the minor construction threshold, but below the DOE Order 413.3B applicability threshold.

On June 21, 2019, NNSA launched a pilot to streamline the execution of low complexity construction projects using an "Enhanced Minor Construction – Commercial (EMC^2)" approach and following the Deputy Secretary's exemption from DOE Order 413.3B requirements. The pilot implements the FY 2018 National Defense Authorization Act mandate to streamline non-nuclear construction projects less than $100 million.

On April 9, 2021, the NNSA Administrator approved expanding the EMC^2 initiative pilot to include this $50 million office building at LANL that supports the Plutonium Modernization mission. The EMC^2 pilot expansion will further advance streamlined acquisition initiatives that increase buying power and accelerate delivery of commercial-like infrastructure.

Significant Changes

This project is a new start in FY 2025.

The project received Mission Need Statement and Program Requirements Document (MNS/PRD) approval on September 15, 2022. Project Management Executive (PME) authority was assigned to the Deputy Associate Administrator for the Office of Infrastructure Lifecycle Management (NA-91). On November 10, 2021, a conceptual design was completed for 23-D-518, Plutonium Modernization Operations & Waste Management Office Building, and charged to that project; this project reuses this conceptual design. An initial cost estimate was based on that conceptual design.

The acquisition approach will be a firm fixed price Design-Build contract.

An NNSA Los Alamos Field Office Federal Project Manager (FPM) has been assigned to this project instead of a Federal Project Director (FPD).

Critical Milestone History

Fiscal Year	MNS/PRD	Conceptual Design Complete	Performance Baseline	Final Design Complete	Construction Mobilization	D&D Complete	Start of Operations
FY 2025	9/15/2022	11/10/2021	2Q FY 2025	4Q FY 2025	4Q FY 2025	N/A	3Q FY 2027

MNS/PRD – Approve Mission Need Statement and Program Requirements Document for a construction project with a conceptual scope and cost range.
Conceptual Design Complete – Actual date the conceptual design was completed (if applicable).
Performance Baseline – Threshold cost, schedule, and scope commitment.
Final Design Complete – Estimated/Actual date the project design will be/was complete(d).
Construction Mobilization – First arrival of contractor personnel, equipment, supplies, and/or temporary facilities at the jobsite**.**
D&D Complete – Completion of D&D work
Start of Operations – Achievement of project completion and readiness to use the system, facility, or capability.

Project Cost History ($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2025	4,900	43,600	48,500	1,000	0	1,000	49,500

2. Project Scope and Justification

Scope
The project is a facility design and construction project. The project will provide an approximately 30,000 square foot (SF) new office facility located in Technical Area 52 of the Pajarito Corridor. The facility will provide approximately 140 workstations and conference rooms to support environmental safety & health services, environmental regulatory compliance, industrial hygiene, radiation control, health physics, quality control, and instrument calibration.

Justification
Additional workstations are required for employees needing routine access to the Technical Area (TA)-46, TA-48, TA-50, TA-55, and TA-63. The missions supported by the additional employees include: Plutonium Modernization (including pit production), Plutonium Surveillance and Science, Plutonium Disposition, Pu-238 Programs, Material Recycle & Recovery, Americium Oxide Production, and other operational and logistical activities at LANL. The existing facilities in and around the TA-55 complex cannot accommodate the additional staff.

The project is being conducted in accordance with the project management concepts within DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, appendix C, paragraphs 1A-K, but is exempt from the Order. The EMC^2 approach uses minor construction project management processes, industry standard terminology for subcontractor terms and conditions, commercial quality controls, and streamlines Environmental, Safety, and Health while still meeting 10 Code of Federal Regulations Part 851 requirements for Worker Safety and Health Program.

Key Performance Parameters (KPPs)
The Threshold KPPs represent the minimum acceptable performance that the project must achieve. Achievement of the Threshold KPPs will be a prerequisite for approval of project completion. The Objective KPPs represent the desired project performance.

These KPPs will be finalized when the Performance Baseline is approved.

Performance Measure	Threshold KPP	Objective KPP
Classified Workstation Capacity	A classified workstation to unclassified workstation ratio of 80:20	100% classified workstations
Conference Room Capacity	Conference rooms capable of conducting classified / unclassified Video Teleconferences at 20 net square feet/occupant	Same as Threshold

3. Financial Schedule

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2025	4,900	4,900	4,900
Total Design	**4,900**	**4,900**	**4,900**
Construction			
FY 2025	43,600	43,600	2,600
FY 2026	0	0	24,600
FY 2027	0	0	16,400
Total Construction	**43,600**	**43,600**	**43,600**
TEC			
FY 2025	48,500	48,500	7,500
FY 2026	0	0	24,600
FY 2027	0	0	16,400
Total TEC	**48,500**	**48,500**	**48,500**
Other Project Costs (OPC)			
FY 2022	500	500	0
FY 2023	0	0	0
FY 2024	0	0	500
FY 2025	0	0	0
FY 2026	0	0	0
FY 2027	500	500	500
Total, OPC	**1,000**	**1,000**	**1,000**
Total Project Costs (TPC)			
FY 2022	500	500	0
FY 2023	0	0	0
FY 2024	0	0	500
FY 2025	48,500	48,500	7,500
FY 2026	0	0	24,600
FY 2027	500	500	16,900
Total TPC	**49,500**	**49,500**	**49,500**

4. Details of Project Cost Estimate

($K)

		Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)				
Design				
	Design	4,500	N/A	N/A
	Federal Design Review Support	0	N/A	N/A
	Contingency	400	N/A	N/A
Total Design		**4,900**	**N/A**	**N/A**
Construction				
	Site Work	4,000	N/A	N/A
	Title 3	3,000	N/A	N/A
	Construction	27,000	N/A	N/A
	Oversight	5,200	N/A	N/A
	Contingency	4,400	N/A	N/A
Total Construction		**43,600**	**N/A**	**N/A**
Total Estimated Cost (TEC)		**48,500**	**N/A**	**N/A**
Contingency, TEC		*4,800*	*N/A*	*N/A*
Other Project Costs (OPC)				
OPC except D&D				
	Analysis of Alternatives	0	N/A	N/A
	Conceptual Design	0	N/A	N/A
	Documents	500	N/A	N/A
	Start-up	400	N/A	N/A
	Equipment Move	0	N/A	N/A
	Contingency	100	N/A	N/A
Total OPC		**1,000**	**N/A**	**N/A**
Contingency, OPC		*100*	*N/A*	*N/A*
Total Project Cost		**49,500**	**N/A**	**N/A**
Total Contingency (TEC+OPC)		***4,900***	***N/A***	***N/A***

5. Schedule of Appropriations Requests

($K)

Request Year	Type	Prior Years	FY2023	FY 2024	FY 2025	FY2026	FY2027	FY2028	FY 2029	Out Years	Total
FY 2025	TEC	0	0	0	48,500	0	0	0	0	0	48,500
	OPC	500	0	0	0	0	500	0	0	0	1,000
	TPC	500	0	0	48,500	0	500	0	0	0	49,500

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	3Q FY 2027
Expected Useful Life (number of years)	40
Expected Future Start of D&D of this capital asset (fiscal quarter)	3Q FY 2067

Related Funding Requirements ($M)

Funding Requirements	Annual Costs		Life Cycle Costs	
Estimate Totals	Previous Estimate	Current Estimate	Previous Estimate	Current Estimate
Operations and Maintenance	N/A	1.55	N/A	$62

7. D&D Information

The new facility being constructed in this project is not replacing existing facilities. LANL will D&D an offsetting amount of space in accordance with their current facility plan.

	Square Feet
New facility being constructed by this project at LANL	30,000
Area of D&D in this project at LANL	0
Area at LANL to be transferred, sold, and/or D&D outside the project, including area previously banked	30,000
Area of D&D in this project at other sites	0

8. Acquisition Approach

The project acquisition is a firm fixed price Design-Build contract managed by the LANL Management & Operating contractor.

25-D-511, PULSE New Access
Nevada National Security Sites (NNSS), Mercury, Nevada
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2025 request for the Principal Underground Laboratory for Subcritical Experimentation (PULSE) New Access Project is $25,000,000, and will be used for construction design scope. The project will provide reliable underground access for larger experimental vessels and staff to operate multiple testbeds at the PULSE facility.

Significant Changes

This project is a new start in FY 2025. The PULSE New Access Project received Critical Decision (CD)-0 on April 26, 2023, which set the Total Project Cost (TPC) range at $85,000,000 - $303,000,000 and the completion date range for CD-4 at September 2028 to September 2034. Following the Analysis of Alternatives (AoA) and initial conceptual design work, this FYNSP funds the project at a preliminary TPC estimate of $310 million based on the need to incorporate an Operational Readiness Review/Readiness Assessment (ORR/RA) due to the project being a modification to a Hazard Category 2 Nuclear Facility. The Project Management Executive (PME) is the Administrator, National Nuclear Security Administration (NNSA). A Federal Project Director has been assigned to this project.

Critical Milestone History

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2025	4/26/2023	4QFY2024	1QFY2025	1QFY2027	3QFY2026	1QFY2027	N/A	4QFY2034

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range
Conceptual Design Complete – Actual date the conceptual design was completed (if applicable).
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
Final Design Complete – Estimated/Actual date the project design will be/was complete(d)
CD-3 – Approve Start of Construction
D&D Complete –Completion of D&D work
CD-4 – Approve Start of Operations or Project Complete

Project Cost History ($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC Total	OPC, Except D&D	OPC, D&D	OPC Total,	TPC
FY 2025	53,000	242,000	295,000	15,244	N/A	15,244	310,244

2. Project Scope and Justification

Scope

The PULSE New Access Project will provide reliable underground access for larger experimental vessels as well as the additional staff required to operate multiple testbeds at the PULSE facility in support of the NNSA Defense Programs' Stockpile Stewardship Program (SSP). The project must provide a means for reliable underground ingress and egress to support the continuing mission of the PULSE facility, including personnel and current and future Enhanced Capabilities for Subcritical Experiments (ECSE) experimental requirements in support of NNSA programs. Initial results of the AoA show that the most feasible alternative will involve the construction of a single new shaft and new hoist capable of meeting personnel, equipment, experimental vessel, and experiment package ingress and egress requirements. Based on the results of the conceptual design, the project will consider the use of long-lead procurements prior to Critical Decision-2/3 (CD-3X) in order to meet schedule requirements.

Justification

The PULSE facility (formerly referred to as the U1a Complex), located in the NNSS Mission Corridor, is a premiere NNSA nuclear Hazard Category (HC) -2 underground experimental facility providing critical experimental capabilities and data to the nation's nuclear security enterprise in support of the SSP and is the only location where relevant quantities of plutonium can be combined with high explosives to perform subcritical experiments (SCEs).

Today, PULSE is challenged with an increased number of SCEs, which will continue to increase with significant NNSA investment to include a new surface building complex, and upgraded utilities and the underground infrastructure enabling ECSE for the next 30+ years. ECSE investments include the U1a Complex Enhancements Project (UCEP), Advanced Sources and Detectors (ASD) project, and Neutron Diagnosed Subcritical Experiments (NDSE) installations (consisting of Z-pinch Experimental Underground System (ZEUS) and ZEUS Testbed Facilities Improvement (ZTBFI) Project) which are outfitting the PULSE facility. These mission investments drive new/additional underground requirements, including extensive expansion of the underground drift network, accommodation of larger 6' experimental vessels, substantial increase in numbers of underground personnel, and construction and commissioning of two new experimental testbeds, including a vastly more powerful, larger radiographic machine (Scorpius) and the dense plasma focus machine (ZEUS).

The two main shafts that support PULSE operations, U1a shaft and U1h shaft, are each equipped with hoisting capabilities for personnel, equipment, and materials. Two shafts are required for PULSE operations for safety and effectiveness. These underground access capabilities present significant risk to the NNSA's ability to fully operate the PULSE in support of planned increased and enhanced experimental requirements. Both the U1a and U1h shafts/hoists are degrading more rapidly than previously planned due to heavy usage with current downtimes for maintenance and repair at 20 percent and increasing.

The U1a shaft was built more than 50 years ago for one-time use as an underground nuclear test emplacement (not conducted). It was then covered over and closed for the next 19 years. To support an underground nuclear test, the U1a shaft was re-opened in September 1988, a hoist and hoist house were added, and a 300-foot drift was mined to the south. In 1991, the U1a shaft was re-entered and rehabilitated, and has since served as the primary underground access supporting the expansion of an underground drift network that facilitated the fielding and execution of SCEs. The U1a hoist has been in use for 30 years. The U1a hoist can transport approximately 10 people per 20 minutes and serves as the backup for the transport of personnel. The U1a shaft currently provides the only capability to transport the six-foot vessel with transportation cart/execution stand to the underground, but requires placing the U1a hoist out of service.

The U1h shaft was built in 2000. It is now the primary personnel access shaft and can transport approximately 40 people per 20 minutes, but is limited to a maximum size of three-foot SCE vessels. The expected future experimental operations schedule will be even more difficult to maintain with the existing PULSE access capabilities, increasing risk of significant mission delays. A new underground access capability is imperative for the PULSE facility to meet NNSA mission requirements over the next 30+ years.

Key Performance Parameters (KPPs)
KPPs were established at CD-0 that consider:

Key Performance Parameter	Description	Threshold
KPP-1	Reliable ingress/egress capability	New components shall have a minimum service life determined during conceptual design & Ability to support a shift change of no less than 100 workers to exit and/or enter within a 30-minute time window
KPP-2	Underground ingress and egress of current and future experimental vessels and transportation cart/execution stand	Meet the design basis for UCEP/ASD relative to enabling ingress and egress of a 6' vessel with transportation cart/execution stand or other equipment of 8 feet wide x 8 feet deep x 10 feet high and a live load of 36,000 lbs.
KPP-3	Support experimental package transport to and from the underground by integrating DOE Safety-in-Design in the project	Meet the Documented Safety Analysis requirements to enable transport of experimental package to and from the underground

3. Financial Schedule

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2025	25,000	25,000	15,500
FY 2026	28,000	28,000	30,500
FY 2027	0	0	7,000
Total Design	**53,000**	**53,000**	**53,000**
Construction			
FY 2026	62,000	62,000	0
FY 2027	90,000	90,000	50,000
FY 2028	90,000	90,000	70,000
FY 2029	0	0	70,000
FY 2030	0	0	52,000
Total Construction	**242,000**	**242,000**	**242,000**
TEC			
FY 2025	25,000	25,000	15,500
FY 2026	90,000	90,000	30,500
FY 2027	90,000	90,000	57,000
FY 2028	90,000	90,000	70,000
FY 2029	0	0	70,000
FY 2030	0	0	52,000
Total TEC	**295,000**	**295,000**	**295,000**

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2022	1,096	1,096	0
FY 2023	6,999	6,999	416
FY 2024	3,945	3,945	7,084
FY 2025	150	150	4,690
FY 2026	150	150	150
FY 2027	150	150	150
FY 2028	150	150	150
FY 2029	2,604	2,604	1,604
FY 2030	0	0	1,000
Total, OPC	**15,244**	**15,244**	**15,244**
Total Project Costs (TPC)			
FY 2022	1,096	1,096	0
FY 2023	6,999	6,999	416
FY 2024	3,945	3,945	7,084
FY 2025	25,150	25,150	20,190
FY 2026	90,150	90,150	30,650
FY 2027	90,150	90,150	57,150
FY 2028	90,150	90,150	70,150
FY 2029	2,604	2,604	71,604
FY 2030	0	0	53,000
Total TPC	**310,244**	**310,244**	**310,244**

4. Details of Project Cost Estimate

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	45,000	NA	NA
Federal Design Review Support	1,000	NA	NA
Contingency	7,000	NA	NA
Total Design	**53,000**	**NA**	**NA**
Construction			
Site Work	20,000	NA	NA
Equipment	50,000	NA	NA
Construction	126,000	NA	NA
Federal Support	11,000	NA	NA
Contingency	35,000	NA	NA
Total Construction	**242,000**	**NA**	**NA**
Total Estimated Cost (TEC)	**295,000**	**NA**	**NA**
Contingency, TEC	*42,000*	*NA*	*NA*
Other Project Costs (OPC)			
OPC except D&D			
Analysis of Alternatives	500	NA	NA
Conceptual Design	3,000	NA	NA
CD-1 Documents/Fed Support	8,044	NA	NA
Start-up	2,700	NA	NA
Equipment Move	0	NA	NA
Contingency	1,000	NA	NA
Total OPC	**15,244**	**NA**	**NA**
Contingency, OPC	*1,000*	*NA*	*NA*
Total Project Cost	**310,244**	**NA**	**NA**
Total Contingency (TEC+OPC)	***43,000***	***NA***	***NA***

5. Schedule of Appropriations Requests

($K)

Request Year	Type	Prior Years	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Total
FY 2025	TEC	0	0	0	25,000	90,000	90,000	90,000	0	295,000
	OPC	1,096	6,999	3,945	150	150	150	150	2,604	15,244
	TPC	1,096	6,999	3,945	25,150	90,150	90,150	90,150	2,604	310,244

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	1QFY2031
Expected Useful Life (number of years)	30
Expected Future Start of D&D of this capital asset (fiscal quarter)	1QFY2061

Related Funding Requirements ($M)

Funding Requirements	Annual Costs		Life Cycle Costs	
Estimate Totals	**Previous Estimate**	**Current Estimate**	**Previous Estimate**	**Current Estimate**
Operations and Maintenance	N/A	15	N/A	$450

7. D&D Information

The new area being constructed in this project is not replacing existing facilities.

	Square Feet
New area being constructed by this project at NNSS	4,750 ft^2
Area of D&D in this project at NNSS	NA
Area at NNSS to be transferred, sold, and/or D&D outside the project, including area previously "banked"	4,750 ft^2
Area of D&D in this project at other sites	NA

8. Acquisition Approach

The project is being managed by the NNSS Management and Operating (M&O) contractor because of operations within the PULSE facility, which is an operating underground nuclear facility with limited access. Design and construction of the surface to underground access are expected to be performed by a subcontractor specializing in that type of work, where the underground modifications are expected to be performed by the NNSS M&O contractor through the M&O cost-plus contract.

23-D-517 Electrical Power Capacity Upgrade
Los Alamos National Laboratory (LANL), Los Alamos, New Mexico
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary:
The FY 2025 Request for the Electrical Power Capacity Upgrade (EPCU) Project is $70,000,000 and will be used to support construction activities. The project will resolve projected future shortfalls in the electrical transmission and distribution system at Los Alamos National Laboratory (LANL), increasing capability and improving reliability and resiliency. The approved CD-1 Total Project Cost range is $214,947,756 to $349,000,000 and the CD-4 schedule range is June 15, 2028, to June 5, 2030. The project achieved CD-1 on November 16, 2022. The high end of the preliminary CD-1 Class 3 estimate includes allowances above contingency and management reserve for market volatilities and uncertainties. Though the physical performance of the technical scope is lower risk, market volatility in the electric power transmission and distribution construction industry is very high; adjustments to the budgeted TPC will be made accordingly if volatility is realized.

Significant Changes:
- This Construction Project Data Sheet (CPDS) is an update of the FY 2024 CPDS and does not include a new start for the budget year.
- Planned final NEPA approvals were delayed from April 2022 to November 2024, primarily because of a complex cultural evaluation process, enhanced consultation with Tribal stakeholders, and interagency collaboration resulting in modifications to the proposed action, and an extended Draft Environmental Assessment (EA) public comment period. NEPA process delays resulted in reconfiguration of the design schedule, shifting the forecasted CD-2/3 decision, while maintaining a consistent CD-4 milestone forecast compared to the CD-1 decision.
- The Management and Operations contractor, TRIAD, completed a full and open competitive acquisition process for a qualified design-build contractor and awarded the contract in January 2024.
- Increased design costs result from the Design Build Contractor aligning high value work packages into the design phase. These high value work packages are coupled with M&O support costs, resulting in higher design costs than estimated at CD-1, but retaining overall project cost expectations compared to the CD-1 estimate. Significant realignment of costs between the design and construction work elements will be observed in the following tables. Realignment reflects the design build contractor's cost information, and the flexibility to realign was essential for attracting well-qualified and cost competitive bids.
- The project team is evaluating the inclusion of a CD-3A to enable purchase of electrical equipment identified by the design build contractor as having significant lead times of approximately 100 weeks in some cases. A forecasted approval date and dollar value were not available at the time this document was developed but would occur prior to the combined CD-2/3 forecast of 2Q 2025.

Critical Milestone History

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2023	8/24/2018	8/18/2021	4Q FY 2022	2Q FY 2024	4Q FY 2024	3Q FY 2024	N/A	1Q FY 2028
FY 2024	8/24/2018	8/18/2021	11/16/2022	4Q FY 2024	4Q FY 2024	4Q FY 2024	N/A	1Q FY 2029
FY 2025	8/24/2018	8/18/2021	11/16/2022	2Q FY 2025	1Q FY 2026	2Q FY 2025	N/A	3Q FY 2030

CD-0 – Approve Mission Need
Conceptual Design Complete – Actual date the conceptual design was completed (if applicable)
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Project Performance Baseline
Final Design Complete – Estimated/Actual date the project design will be/was complete(d)

CD-3 – Approve Start of Construction/Execution
D&D Complete – Completion of D&D work (see Section 9)
CD-4 – Approve Start of Operations or Project Completion

Project Cost History

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2023	24,000	260,000	284,000	9,938	N/A	9,938	293,938
FY 2024	29,000	260,000	289,000	14,140	N/A	14,140	303,140
FY 2025	67,683	221,317	289,000	14,140	N/A	14,140	303,140

2. Project Scope and Justification

Scope
In support of LANL's mission growth, the EPCU project will improve the electrical power capacity for the Laboratory as it will allow load growth from 116 MVA (existing limit) up to a minimum of 200 MVA (future limit). Improvements include a new offsite 115 KV import transmission line, crossing Bureau of Land Management, United States Forest Service, and DOE administered land. Additionally, an on-site 115kV transmission line approximately 4.5 miles long; upgrades for three 115 KV/13.8 KV substations; addition of medium-voltage, underground, and substation inter-tie circuits and switchgear; and addition of medium-voltage feeder circuits and switchgear to increase power capacity to support 60 MW for strategic computing platforms at LANL.

Justification
The mission of the project is to resolve the projected future shortfalls in the Laboratory's electrical transmission and distribution system to ensure it can reliably support the power demands from all programs performing work at LANL while maintaining compliance with applicable FERC/NERC requirements for utility operations. The site will exceed peak power demand for the Norton Line (NL), which is one of two 115kV transmission lines that feeds power to LANL. The NL is forecasted to exceed its operating limit within the 2026/2027 timeframe without operational constraint. LANL anticipates an increase in power demands across several mission areas including integrated nuclear programs, science & technology experiments, and infrastructure re-investment over the next ten years. While most of this demand growth is temporally distributed, growth in high-performance computing for large computing platforms is a key schedule driver. Without sufficient electrical capacity and capability, the DOE's and NNSA's core mission pillars at LANL will be fundamentally compromised.

The funds appropriated under this data sheet may be used for contracted support services to the Federal Program Manager and the FPD to conduct independent assessments of the planning and execution of this project required by DOE O 413.3B and to conduct technical reviews of design and construction documents. The project is being conducted in accordance with the project management requirements in DOE O 413.3B, Program and Project Management for the Acquisition of Capital Assets. As allowed by DOE O 413.3B, work will be phased to improve overall efficiency.

Key Performance Parameters (KPPs)
Preliminary Key Performance Parameters (KPPs) were established at CD-0. The Threshold KPPs consider minimum import capacity, power system reliability, distribution capacity to serve the Strategic Computing Center, and service restoration. Achievement of the Threshold KPPs is a prerequisite for approval of CD-4, *Project Completion*. These preliminary KPPs will

be finalized when the project is baselined at CD-2/3. The TPC approved at CD-1 is based on the Threshold KPPs stated below.

Performance Measure	Threshold KPP	Objective KPP
Power redundancy	T1 - Provide a minimum capacity of 200 MVA 100% redundancy, N-1, for all off-site and on-site transmission at 115 kV.	O1a - Provide 234 MVA capacity 100% redundancy, N-1, for all off-site and on-site transmission lines at 115 kV. O1b - Provide 266 MVA Capacity 100% redundancy, N-1, for all off-site and on-site transmission lines at 115 kV.
Power distribution	T2 - N-2, for substation transformers and substation interties and, N-1, for the balance of feeder circuits. (For example: If a long lead item fails (e.g., a distribution duct or transformer) the system will still operate while allowing maintenance or failure of a second major component.)	O2a – Provide active Volt-amp- reactive (VAR) devices support on key distribution circuits (voltage support). O2b – Provide additional substation interties to increase operational flexibility. O2c – Provide on-site storage to reduce peak demand and provide VAR power.
Power capacity	T3 – Provide 60 MVA capacity distribution feeder circuits and switchgear to SCC.	O3 – Provide 80 MVA capacity distribution feeder circuits and switchgear to SCC.

3. Financial Schedule ($K)

	($K)		
	Budget Authority (Appropriations)	**Obligations**	**Costs**
Total Estimated Cost (TEC)			
Design			
FY 2023	20,113	20,113	1,563
FY 2024	30,000	30,000	35,513
FY 2025	17,570	17,570	25,607
FY 2026	0	0	5,000
FY 2027	0	0	0
FY 2028	0	0	0
Total Design	**67,683**	**67,683**	**67,683**
Construction			
FY 2023	3,887	3,887	0
FY 2024[a]	45,000	45,000	1,300
FY 2025	52,430	52,430	85,000
FY 2026	120,000	120,000	87,517
FY 2027	0	0	45,000
FY 2028	0	0	2,500
Total Construction	**221,317**	**221,317**	**221,317**
TEC			
FY 2023	24,000	24,000	1,563
FY 2024[b]	75,000	75,000	36,813
FY 2025	70,000	70,000	110,607
FY 2026	120,000	120,000	92,517
FY 2027	0	0	45,000
FY 2028	0	0	2,500
Total TEC	**289,000**	**289,000**	**289,000**

[a] While NNSA is still analyzing whether to seek approval of a CD-3A for early equipment procurement, the costing profile in this table assumes a CD-3A approval in the third quarter of FY 2024.
[b] FY 2024 Budget Authority assumptions are based on the FY 2024 President's Budget Request

	($K)		
	Budget Authority (Appropriations)	**Obligations**	**Costs**
Other Project Costs (OPC)			
FY 2019	1,038	1,038	355
FY 2020	2,616	2,616	1,958
FY 2021	4,049	4,049	2,784
FY 2022	3,626	3,626	2,497
FY 2023	0	0	2,171
FY 2024	0	0	1,564
FY 2025	0	0	0
FY 2026	0	0	0
FY 2027	2,811	2,811	1,000
FY 2028	0	0	1,811
Total, OPC	**14,140**	**14,140**	**14,140**
Total Project Costs (TPC)			
FY 2019	1,038	1,038	355
FY 2020	2,616	2,616	1,958
FY 2021	4,049	4,049	2,784
FY 2022	3,626	3,626	2,497
FY 2023	24,000	24,000	3,734
FY 2024	75,000	75,000	38,377
FY 2025	70,000	70,000	110,607
FY 2026	120,000	120,000	92,517
FY 2027	2,811	2,811	41,000
FY 2028	0	0	4,311
Total TPC	**303,140**	**303,140**	**303,140**

4. Details of Project Cost Estimate

		($K)		
		Current Total Estimate	**Previous Total Estimate**	**Previous Validated Baseline**
Total Estimated Cost (TEC)				
Design				
	Design	54,099	25,200	TBD
	Contingency	13,584	3,800	TBD
Total Design		**67,683**	**29,000**	**TBD**
Construction				
	Site Work	3,271	4,054	TBD
	Equipment	44,826	50,672	TBD
	Construction	83,411	108,371	TBD
	Title III Services	4,907	6,080	TBD
	Oversight & Management	31,075	56,173	TBD
	Contingency	53,827	34,650	TBD
Total Construction		**221,317**	**260,000**	**TBD**
Total Estimated Cost (TEC)		**289,000**	**289,000**	**TBD**
Contingency, TEC		*67,411*	*38,450*	TBD
Other Project Costs (OPC)				
OPC except D&D				
	Project Definition	784		
	Conceptual Design	3,305	4,900	TBD
	NEPA & Contracting	5,582		
	Start-up	3,758	2,811	TBD
	Other Project Costs	586	6,429	TBD
	Contingency	125	0	TBD
Total OPC		**14,140**	**14,140**	**0**
Contingency, OPC		*125*	*0*	*TBD*
Total Project Cost		**303,140**	**303,140**	**TBD**
Total Contingency (TEC+OPC)		***67,536***	***38,450***	***TBD***

5. Schedule of Appropriation Requests

($K)

Request Year	Type	Prior Years	FY2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY2029	Total
FY 2023	TEC	0	24,000	95,000	86,000	79,000	0	0	0	284,000
	OPC	7,127	0	0	0	0	2,811	0	0	9,938
	TPC	7,127	24,000	95,000	86,000	79,000	2,811	0	0	293,938
FY 2024	TEC		24,000	75,000	86,000	104,000	0	0	0	289,000
	OPC	11,329	0	0	0	0	2,811	0	0	14,140
	TPC	11,329	24,000	75,000	86,000	104,000	2,811	0	0	303,140
FY 2025	TEC	0	24,000	75,000	70,000	120,000	0	0	0	289,000
	OPC	11,329	0	0	0	0	2,811	0	0	14,140
	TPC	11,329	24,000	75,000	70,000	120,000	2,811	0	0	303,140

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	1Q FY 2029
Expected Useful Life (number of years)	41
Expected Future Start of D&D of this capital asset (fiscal quarter)	1Q FY 2070

Related Funding Requirements
(Budget Authority in Millions of Dollars)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations and Maintenance	4.08	3.54	160	159.3

7. D&D Information

There is no new area being constructed in this construction project. This scope of this project does not include adding any floor space to an existing facility.

8. Acquisition Approach

The Project will be managed and constructed by the LANL Management and Operating (M&O) contractor, which in turn is using a Design-Build firm fixed-price, best value procurement subcontract.

Secure Transportation Asset

Overview

The Secure Transportation Asset (STA) is responsible for the safe and secure transport of classified shipments that may contain nuclear weapons, weapons components, and/or special nuclear material. Cargo is transported in highly modified secure tractor-trailers and escorted by Federal Agents (FA) providing security and national incident command system response in the event of emergencies. Nuclear weapon life-extension programs, limited-life component exchanges, surveillance, dismantlement, nonproliferation activities, and experimental programs rely on safe, secure, and on-schedule transport of STA cargos.

STA currently has the mission capacity to meet NNSA stockpile sustainment priorities, strategic material and component transfers, and other DOE workloads. STA will continue to balance and prioritize customer requests against capacity. Since its establishment in 1974, STA has maintained its legacy of safety and security to include no loss of cargo and no radiological release on any shipment.

The FY 2025 Budget Request of $371,424,000 is 7.8 percent above FY 2023 Enacted. The STA program includes the Operations and Equipment (OPS) and Program Direction (PD) subprograms. The OPS subprogram provides the STA's transportation service infrastructure required to meet NNSA's nuclear security activities as outlined in the Stockpile Stewardship and Management Plan. The PD subprogram provides salaries, travel, and other related expenses in support of FAs and the secure transportation workforce.

Secure Transportation Asset
Funding ($K)

Italics denotes reporting level	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
Secure Transportation Asset					
Operations and Equipment	**214,367**	**214,367**	**236,160**	**+21,793**	**+10.2%**
Program Direction	**130,070**	**130,070**	**135,264**	**+5,194**	**+4.0%**
Total, Secure Transportation Asset	**344,437**	**344,437**	**371,424**	**+26,987**	**+7.8%**
Federal FTEs	**506**	**514**	**511**	**+5**	**+1.0%**

Secure Transportation Asset
Funding ($K)

Italics denotes reporting level	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
Secure Transportation Asset					
Operations and Equipment	**214,367**	**214,367**	**236,160**	**+21,793**	**+10.2%**
Mission Capacity	*57,628*	*57,628*	*59,764*	*+2,136*	*+3.7%*
Security/Safety Capability	*24,954*	*24,954*	*23,846*	*-1,108*	*-4.4%*
Infrastructure and C5 Systems	*29,816*	*29,816*	*40,122*	*+10,306*	*+34.6%*
Program Management	*9,034*	*9,034*	*8,808*	*-226*	*-2.5%*
Mobile Guardian Transporter	*92,935*	*92,935*	*103,620*	*+10,685*	*+11.5%*
Total Operations and Equipment	**214,367**	**214,367**	**236,160**	**+21,793**	**+10.2%**
Program Direction	**130,070**	**130,070**	**135,264**	**+5,194**	**+4.0%**
Salaries and Benefits	*100,214*	*100,214*	*101,632*	*+1,418*	*+1.4%*
Travel	*7,081*	*7,081*	*7,042*	*-39*	*-0.6%*
Other Related Expenses	*22,775*	*22,775*	*26,590*	*+3,815*	*+16.8%*
Total, Program Direction	**130,070**	**130,070**	**135,264**	**+5,194**	**+4.0%**
Total, Secure Transportation Asset	**344,437**	**344,437**	**371,424**	**+26,987**	**+7.8%**

Secure Transportation Asset
Outyear Funding ($K)

Italics denotes reporting level	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Secure Transportation Asset				
Operations and Equipment	**274,073**	**316,645**	**312,603**	**314,803**
Program Direction	**138,100**	**140,996**	**149,113**	**150,152**
Total, Secure Transportation Asset	**412,173**	**457,641**	**461,716**	**464,955**
Federal FTEs	**508**	**497**	**489**	**482**

Secure Transportation Asset
Outyear Funding ($K)

Italics denotes reporting level	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Secure Transportation Asset				
Operations and Equipment				
Mission Capacity	*62,550*	*106,884*	*73,924*	*70,330*
Security/Safety Capability	*24,348*	*24,863*	*25,387*	*25,522*
Infrastructure and C5 Systems	*55,005*	*49,952*	*56,250*	*68,885*
Program Management	*8,951*	*9,139*	*9,340*	*9,380*
Mobile Guardian Transporter	*123,219*	*125,807*	*147,702*	*140,686*
Total Operations and Equipment	**274,073**	**316,645**	**312,603**	**314,803**
Program Direction				
Salaries and Benefits	*104,168*	*106,386*	*112,748*	*113,541*
Travel	*7,181*	*7,332*	*7,478*	*7,530*
Other Related Expenses	*26,751*	*27,278*	*28,887*	*29,081*
Total, Program Direction	**138,100**	**140,996**	**149,113**	**150,152**
Total, Secure Transportation Asset	**412,173**	**457,641**	**461,716**	**464,955**

Secure Transportation Asset
Explanation of Major Changes ($K)

	FY 2025 Request vs FY 2023 Enacted
Secure Transportation Asset (STA)	
Operations and Equipment:	**+21,793**
The $21.8M increase reflects two main areas: 1. Design and production work of the Mobile Guardian Transporter (MGT) to include critical system testing, qualifications, and procurement of components toward the FPU. 2. Construction of the Vehicle Maintenance Facility at Agent Operations Central Command to ensure full operational mission requirements that support both the Safeguard Transporter (SGT) and MGT.	
Program Direction:	**+5,194**
The $5.2M increase provides the ability to maintain the safety and security of mission-related requirements to fully support the Nuclear Security Enterprise (NSE). Included is salaries and benefits for 511 FTEs, travel, and other related expenses for the FA and staff workforce. Projections consider new Federal Agent Candidate Training (FACT) candidates, turnover, historical trend analysis, planned workload, and recruitment, salary, and retention incentives for Nuclear Materials Courier positions.	
Total, Secure Transportation Asset	**+26,987**

Secure Transportation Asset
Operations and Equipment

Description
The Operations and Equipment (OPS) subprogram budget supports modernization and sustainment of STA transportation assets, including life extension of the Safeguard Transporter (SGT) until replaced by the Mobile Guardian Transporter (MGT). The MGT First Production Unit (FPU) is planned for completion as close to FY 2029 as possible. Additionally, funding provides for maintenance and replacement of specialized mission vehicles and aircraft, minor construction, command and control system platforms, FACT program, and approximately 302 support service contract personnel, assisting in several areas (aviation, information technology, and engineering).

Within the STA OPS subprogram, five activities make unique contributions to the safety and security of the nuclear stockpile. These activities accomplish the following:

(1) Mission Capacity – provides mission-essential agent equipment, maintenance, modification and replacement of the transportation fleet, and aviation services.
(2) Security/Safety Capability – Conducts FACT to increase the FA workforce, develops and implements new fleet technologies, executes agent sustainment training, and implements Security, Safety, and Emergency Response programs.
(3) Infrastructure and Command and Control, Communication, Computer and Cyber (C5) Systems – provides support for facility maintenance, minor construction projects, and C5 systems.
(4) Program Management – provides corporate functions and business operations that control, assist, and direct secure transport operations.
(5) Mobile Guardian Transporter (MGT) – allows for the design, development, testing, and fabrication of the MGT.

Mission Capacity
Sustains STA systems through equipment purchases to fulfill transportation requirements. Asset maintenance is critical to support current and future missions. Current assets include agent equipment, tractors, trailers, escort vehicles, other support vehicles, and aircraft. Modernizing and sustaining these assets requires an integrated, long-term strategy and substantial investment. STA's strategy includes retiring outdated assets, refurbishing existing assets to extend their useful life, and procuring new assets with increased capabilities to meet our customers ever changing needs and evolving threats. STA's efforts include:

- Regular replacement of older vehicles with new vehicles which includes the design, engineering, testing, and fielding of specialized vehicles, tractors, and trailers necessary for successful convoy operations.
- Maintenance and sustainment of STA's aircraft fleet ensuring availability and reliability for mission operations.
- Sustain the required readiness posture of STA vehicles and aircraft fleet.

Security/Safety Capability
Sustains STA systems capacity through security and safety upgrades. This includes the following activities:

- Identify, design, and test new fleet and mission technologies. Deliverables include enhancements to the secure trailers, data analysis, information dissemination, and use of emerging physical security technology.
- Conduct three FACT classes each year to increase agent end-strength through training and equipping FA candidates with the best products and tools available for mission requirements.
- Sustain specialized FA skills and qualifications by providing technical equipment, logistics, curriculum development, and staffing necessary to conduct Special Response Force training, Operational Readiness Training (ORT), Consolidated Force-on-Force (CFoF) exercises, and Agent Sustainment Training. Sustainment Training includes surveillance detection, tactics, advanced driving skills, and firearm education. In addition, funding supports contracts for mission operation support and off-site training venues capable of supporting unit or FA commands during training activities.
- Maintain security and safety programs by conducting liaison activities with state and local law enforcement organizations, analysis of security methods and equipment, vulnerability assessments, development of Safeguards and Security Plans and combat simulation computer modeling. Furthermore, validation of needed safety and security

measures, execution of safety studies recommendations and review of engineering analysis results, execution of Nuclear Explosive Safety protocols and risk reduction of over-the-road safety issues.
- Maintain the Emergency Operations Center and the Transportation and Emergency Control Center in Albuquerque, New Mexico, train, and exercise the STA emergency response capability. Includes the Emergency Management Program, FA Incident Command System refresher, and sustainment training.
- The unmanned systems program continues to investigate, develop, acquire, and support the integration of unmanned technologies for use in the STA mission to conduct safe and secure operations. Unmanned capabilities, air, and ground enhance situational awareness during emergency or off-normal events involving critical STA mission assets. A Counter Unmanned Aerial System (CUAS) program is currently being analyzed to determine the benefit of integrating into STA operations.

Infrastructure and Command, and Control, Communication, Computer, and Cyber (C5)
Sustains the system platforms operated by STA. These systems provide critical information obtained, analyzed, and disseminated prior and during mission. Includes continuous monitoring of all data guaranteeing it is accurate/valid and constant communication within convoys, between convoys and headquarters (HQ) to ensure mission success. These activities must be accomplished in real-time while balancing cybersecurity requirements, reliability, and integrity. Additionally, STA leverages other systems technology supporting business processes and operations which improve efficiency and effectiveness of STA. This funding supports the following sub-elements:
- Modernize and sustain C5 systems activities to maintain vigilant oversight of nuclear convoys. Operate the Transportation Emergency Control Centers (TECC) and maintain the New Mexico Relay Station, and communications systems across the STA.
- Maintain and expand the Mission Management System, a secure unclassified to classified controlled interface. This allows communications from unclassified to classified systems, and maintenance and enhancement of a common operating picture for the TECC as well as convoys.
- Expand, upgrade, and maintain the STA facilities and equipment in support of mission requirements. STA strives to minimize operational safety and health risks by addressing facility maintenance promptly at all four of its sites. Facilities include FA commands, vehicle mechanical and electronic maintenance shops, training command, and support staff buildings. Activities to sustain these facilities include repair, maintenance, and minor construction projects.

Program Management
Creates a well-managed, responsive, and accountable organization by employing effective business practices for the STA program. This activity includes:
- Corporate functions such as technical document support and business processes that control, assist, and direct secure transport operations (includes supplies, equipment, and regulation control procedures).
- Assess, evaluate, and improve functions and processes including self-assessments, configuration management, quality assurance program, and business integration activities.

Mobile Guardian Transporter (MGT)
Provides for the design, production, and testing of the MGT (replacement for the existing SGT). The MGT will assure the safety and security of cargo and containers, protect the public, meet nuclear explosive safety requirements associated with accident scenarios, reduce the risk to security threats, and provide for enhanced communications. This includes the following activities:
- MGT Training Trailers
- Mechanical Systems Development
- Electronics and Auxiliary Systems Development
- Active Delay System Development
- Enhanced Cargo Restraint Systems

Highlights of the FY 2025 Budget Request
The development, design, production, and maintenance of specialized mission vehicles, tractors, trailers, escort vehicles, training of FAs, and robust communications systems.

FY 2025 Funding Specifically Supports:

- Life extension and risk reduction activities for the aging SGT to ensure the fleet continues to meet the Nuclear Explosive Safety Study requirements until the MGT is integrated into mission operations.
- Design and production work of the MGT to include critical system testing, qualifications, and procurement of components toward the FPU.
- Replacement and refurbishment of armored tractors, escort vehicles, and support vehicles.
- Maintenance of existing facilities required by DOE Order 430.1C and minor construction projects to provide safe and secure facility infrastructure to support training manpower, transportation, and independent operations. Specifically supports the construction of a Vehicle Maintenance Facility at Agent Operations Central Command.
- Sustainment of system platforms operated by STA, including continuous monitoring of all data and communication within and between convoys and headquarters to ensure mission success.

FY 2026 – FY 2029 Key Milestones

- Delivery of MGT FPU as close to FY 2029 as possible.
- Lifecycle replacement of 737-400 aircraft in FY 2027.
- Facility and minor construction projects across STA sites, including construction of the Training Command Multi-Use Facility, Agent Operations Central Command Federal Agent Facility, Aviation Hangar Extension, and Apron C replacement.
- Replacement of the next Armored Tractors, Escort Vehicles, and Tractor Control Unit in mission vehicles.

FY 2023 Accomplishments

- Completed 92 weapon/special nuclear materials shipments and made over 64 limited-life component deliveries without incident.
- MGT:
  - Completed Test Article 2 (TA2) Over-the-Road test.
  - Acquired, assembled, and tested all modules for MGT TA2.
  - Completed environmental testing of the MGT door.
  - Delivered the rolling chassis for the MGT Pre-Production Unit.

Operations and Equipment
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Operations and Equipment $214,367,000	**Operations and Equipment $236,160,000**	**Operations and Equipment +$21,793,000**
Mission Capacity $57,628,000	**Mission Capacity $59,764,000**	**Mission Capacity +$2,136,000**
• Procured 9 Escort Vehicles (EV4). • Performed assessment of design and development options of the Armored Tractor (PHOENIX). • Implemented risk reduction initiatives for sustainment of the SGT until MGT is fully integrated into mission operations. • Implemented Vehicle sustainment efforts to continue redesign of the Tractor Control Unit (TCU).	• Procure 7 EV4s. • Continue assessment of design and development options for the PHOENIX working toward FPU in FY 2026. • Continue risk reduction initiatives for sustainment of the SGT until MGT is fully integrated into mission operations.	• Increase to aviation contract, specifically related to labor and parts. • The FY 2023 enacted budget was offset using carryover to support vehicle/mechanical maintenance.
Security/Safety Capability $24,954,000	**Security/Safety Capability $23,846,000**	**Security/Safety Capability -$1,108,000**
• Equipment and services to support FACT courses. • Conducted ORT exercise and CFoF exercise. • Conducted annual Security Site Survey and Staff Assistance Visits. • Conducted the National Incident Management System/Incident Command System training program for FAs and staff.	• Equipment and services to support FACT courses. • Conduct ORT exercise and CFoF exercise. • Conduct annual Security Site Survey and Staff Assistance Visits. • Conduct the National Incident Management System/Incident Command System training program for FAs and staff.	• Reduction reflects completion of the following key assessments and upgrades: ▪ STA access control software upgrade. ▪ Test and evaluation related to Cooperative Adversarial Security Assessments ▪ Assessment on current and future vehicles risk of Original Equipment Manufacturer technologies.
Infrastructure and C5 Systems $29,816,000	**Infrastructure and C5 Systems $40,122,000**	**Infrastructure and C5 Systems +$10,306,000**
• Agent Operations Central Command Infrastructure Plan project. • Conducted maintenance and minor construction projects at the FA commands and training facility. • Continued implementation and maintenance of applications and systems that interconnect	• Conduct maintenance and minor construction projects, at the FA commands and training facility to include construction of the Vehicle Maintenance Facility at Agent Operations Central Command in Amarillo, Texas.	• Construction of the Vehicle Maintenance Facility at Agent Operations Central Command in Amarillo, Texas.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
communications with STA vehicles and the TECC. • Supported advanced cyber threat intelligence capabilities and integrated awareness into mission operations.	• Maintain applications and systems that interconnect communications with STA vehicles and the TECC. • Support advanced cyber threat intelligence capabilities and integrate awareness into mission operations.	
Program Management $9,034,000	**Program Management $8,808,000**	**Program Management -$226,000**
• Conducted Quality Assurance assessments. • Continued corporate business services and integration activities.	• Conduct Quality Assurance assessments. • Continue corporate business services and integration activities.	• The reduction accounts for a rebaseline of requirements.
Mobile Guardian Transporter $92,935,000	**Mobile Guardian Transporter $103,620,000**	**Mobile Guardian Transporter +$10,685,000**
• Continued Development of Engineering Releases. • Continued Pre-Production Unit (PPU) stage builds. • Validated PPU manufacturing processes.	• Design and production work to include critical system testing, qualifications, and procurement of components.	• Design and production work to include critical system testing, qualifications, and procurement of components.

Secure Transportation Asset
Program Direction

Description

The PD subprogram budget provides for personnel ensuring the safety and security of the nuclear stockpile. The total planned Full Time Equivalents (FTE) supports the FA force, federal pilots, emergency management plans/activities, security and safety programs, and other key elements of the STA mission. STA is committed to a stable human resources strategy to achieve an optimal agent force to meet the National Nuclear Security Administration (NNSA) NSE priorities and mission requirements. The optimal FA force is determined by analysis of the projected workload and the resources required to support the NSE weapon modernization and production schedule. STA continues to execute three Federal Agent Candidate Training (FACT) courses per FY. In FY 2023, STA successfully implemented initiatives to attract, hire, and maintain the FA workforce, such as increased salaries, recruitment and retention bonuses, and ladder positions.

Salaries and Benefits

Salaries and Benefits provides for 511 federal Full Time Equivalents (FTE) located in Albuquerque, New Mexico, Fort Chaffee, Arkansas, Oak Ridge, Tennessee, and Amarillo, Texas. Funding includes overtime, worker's compensation, and Permanent Change of Station (PCS) associated with FAs and support staff.

Travel

Travel funds utilized for secure convoys, training at military installations and other facilities, and program oversight.

Other Related Expenses

Provides professional development training for all STA federal employees including new employee orientation, job specific training, supervisory, professional, leadership and soft skills, certification training, leadership development programs, college tuition, academic degree program, and group training not related to FA unit training. Includes approximately 97 support service contract FTEs (Human Reliability Program (HRP) for FAs and designated staff, provides for Energy Information Technology (IT) Services/DOE Common Operating Environment (EITS/DOECOE), and other contractual service requirements to include facility maintenance). Provides uniforms or allowances for uniforms, as authorized by 5 U.S.C. 5901-5902 for select STA staff as outlined in STA Policy 1.22D.

Highlights of the FY 2025 Budget Request

The FY 2025 request supports FA and staff FTEs for STA mission execution and priorities. This includes:

- Support for 511 Federal FTEs and 97 support service contractor FTEs.
- Travel to support mission and training requirements.
- EITS/DOECOE fees, support service contracts, HRP, and facility maintenance costs.
- Professional development training for FAs and staff.

FY 2026 – FY 2029 Key Milestones

- Continue to support FA and staff FTEs, travel for mission, operational, and training requirements, EITS/DOECOE fees, HRP, and support service contracts.

FY 2023 Accomplishments

- Completed 3 FACT courses and graduated 42 new FAs.
- Implemented initiatives for FAs such as, higher starting pay, recruitment/retention bonuses, and ladder positions.

Program Direction
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Program Direction $130,070,000	**Program Direction $135,264,000**	**Program Direction +$5,194,000**
Salaries and Benefits $100,214,000	**Salaries and Benefits $101,632,000**	**Salaries and Benefits +$1,418,000**
• Recruited, hired, and retained quality personnel based on current and future mission needs. • Filled FA and staff vacancies to sustain workload requirements. • Conducted three FACT courses.	• Recruit, hire, and retain quality personnel based on current and future mission needs. • Fill FA and staff vacancies to sustain workload requirements. • Conduct three FACT courses (projections consider gains from FACT and losses due to mandatory retirements and attrition). • Recruitment, salary, and retention incentives for Nuclear Materials Couriers.	• Supports 511 FTEs.
Travel $7,081,000	**Travel $7,042,000**	**Travel -$39,000**
• Travel required to transport nuclear weapons, components, and special nuclear material. • Funding to support travel to facilities that provide unique training to maintain agent skill sets. • Charter plane contract funded biennially as a contingency plan to support requirements when current STA aircraft is unavailable.	• Travel required to transport nuclear weapons, components, and special nuclear material. • Funding to support travel to facilities that provide unique training to maintain agent skill sets. • Charter plane contract funded biennially as a contingency plan to support requirements when current STA aircraft is unavailable.	• Reduction due to rebaseline of travel requirements.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Other Related Expenses $22,775,000	**Other Related Expenses $26,590,000**	**Other Related Expenses +$3,815,000**
• Continuous medical evaluations of individuals assigned to HRP duties and additional medical training for STA FA medics. • Supported FACT at the Federal Law Enforcement Training Center. • Supported mandatory ethics/integrity training for new STA employees. • Supported processing of security clearances. • Supported EITS/DOECOE costs. • Supported service contracts for facility maintenance, intelligence analysts, and other administrative staff at multiple STA sites.	• Continuous medical evaluations of individuals assigned to HRP duties and additional medical training for STA FA medics. • Support FACT at the Federal Law Enforcement Training Center. • Support processing of security clearances. • Support EITS/DOECOE costs. • Support service contracts for facility maintenance, intelligence analysts, and other administrative staff at multiple STA sites. • Professional development training for all STA Federal employees.	• Increased OCIO/EITS services costs. • Increased clearance and investigation costs. • Increased facility maintenance to support two new facilities at Agent Operations Western Command in Albuquerque, New Mexico (Federal Agent Facility and Vehicle Maintenance Facility). • Increased cost in support service contracts (PD specific).

Secure Transportation Asset
Capital Equipment Summary
($K)

	Total	Prior Years	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 vs FY 2023 ($)
Capital Equipment (> $500K)						
Total Non-MIE Capital Equipment (TEC <$10M)	N/A	N/A	6,139	9,163	9,513	+3,374
Mobile Guardian Transporter	652,600	0	0	0	0	0
Replacement Aircraft (Lifecycle Replacement 737)	45,000	0	0	0	0	0
Total, Capital Equipment	**N/A**	**N/A**	**6,139**	**9,163**	**9,513**	**+3,374**

Secure Transportation Asset
Outyear Capital Equipment Summary
($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
Capital Equipment (> $500K)					
Total Non-MIE Capital Equipment (TEC <$10M)	9,787	3,097	3,162	3,228	0
Mobile Guardian Transporter	0	0	0	13,052	639,548
Replacement Aircraft (Lifecycle Replacement 737)	0	45,000	0	0	0
Total, Capital Equipment	**9,787**	**48,097**	**3,162**	**16,280**	**N/A**

Defense Nuclear Security

Overview

The Office of Defense Nuclear Security (DNS) leads, develops, and implements the National Nuclear Security Administration's (NNSA) security program, enabling its Nuclear Security Enterprise (NSE) missions. DNS protects NNSA personnel, facilities, nuclear weapons, and special nuclear materials (SNMs) from a full spectrum of threats, ranging from minor security incidents to acts of terrorism, at its national laboratories, production plants, processing facilities, and Nevada National Security Site (NNSS). In addition, DNS leads, develops, and implements the National Nuclear Security Administration's security program to enable the nuclear security enterprise mission-set by protecting materials, information, and people. Employing more than 2,200 Protective Force (PF) officers, DNS secures more than 6,000 buildings and protects more than 69,000 personnel.

Defense Nuclear Security
Funding ($K)

Italics denotes reporting level	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
Defense Nuclear Security					
Operations and Maintenance	**868,172**	**868,172**	**1,126,000**	**+257,828**	**-100.0%**
Protective Forces	*460,937*	*460,937*	*618,292*	*+157,355*	*+34.1%*
Physical Security Systems	*168,039*	*168,039*	*205,133*	*+37,094*	*+22.1%*
Information Security	*61,239*	*61,239*	*73,793*	*+12,554*	*+20.5%*
Personnel Security	*52,342*	*52,342*	*70,363*	*+18,021*	*+34.4%*
Material Control and Accountability	*45,125*	*45,125*	*55,930*	*+10,805*	*+23.9%*
Security Program Operations and Planning	*80,490*	*80,490*	*102,489*	*+21,999*	*+27.3%*
Total, Operations and Maintenance	**868,172**	**868,172**	**1,126,000**	**+257,828**	**+29.7%**
Construction	**3,928**	**3,928**	**54,000**	**+50,072**	**+1274.7%**
Total, Defense Nuclear Security	**872,100**	**872,100**	**1,180,000**	**+307,900**	**+35.3%**

Defense Nuclear Security
Outyear Funding ($K)

Italics denotes reporting level	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Defense Nuclear Security				
Operations and Maintenance	**1,140,647**	**1,202,656**	**1,254,054**	**1,280,007**
Protective Forces	*639,441*	*685,030*	*716,376*	*738,446*
Physical Security Systems	*191,050*	*201,755*	*205,374*	*208,974*
Information Security	*74,060*	*75,541*	*77,026*	*80,397*
Personnel Security	*70,964*	*71,536*	*74,553*	*76,741*
Material Control and Accountability	*55,851*	*58,304*	*64,149*	*65,364*
Security Program Operations and Planning	*109,281*	*110,490*	*116,576*	*110,085*
Total, Operations and Maintenance	**1,140,647**	**1,202,656**	**1,254,054**	**1,280,007**
Construction	**10,100**	**0**	**0**	**0**
Total, Defense Nuclear Security	**1,150,747**	**1,202,656**	**1,254,054**	**1,280,007**

Defense Nuclear Security
Explanation of Major Changes ($K)

	FY 2025 Request vs FY 2023 Enacted
Defense Nuclear Security	
Operations and Maintenance: The increase is based on labor wage increases and additional security requirements associated with continued mission growth across the NNSA NSE, including plutonium pit production, Kansas City expansion efforts, preparation for Uranium Processing Facility (UPF) testing and transition to operations, and transition of the Savannah River Site (SRS) Safeguards and Security (S&S) scope from the Department of Energy's Office of Environmental Management (DOE-EM) to NNSA. In addition, funding supports Fiscal Year (FY) 2025 Core Security requirements and initiatives for the Physical Security Center of Excellence (PSCOE) and the Center for Security Technology, Analysis, Response, and Testing (CSTART).	**+257,828**
Construction: The increase provides funding for the West End Protected Area Reduction (WEPAR) project above the original baselined cost which is needed to address delays in projects outside of WEPAR scope and contractor performance issues within the WEPAR project.	**+50,072**
Total, Defense Nuclear Security	**+307,900**

Defense Nuclear Security
Budget Request Highlights and Future Milestones

Highlights of the FY 2025 Budget Request

The FY 2025 Budget Request of $1,180,000,000 reflects an increase of $307,900,000, which is 35.3% above the FY 2023 Enacted level for DNS. The Budget Request includes the transfer of SRS S&S scope to NNSA from DOE-EM, labor wage increases for all Management and Operating contractor mission partners (M&O partners), and funding to support key security programs across all S&S functional areas required to support implementation of a risk-based, layered protection strategy at the sites. The Budget Request supports increased security needs resulting from known mission growth across the NSE, including pit production at Los Alamos National Laboratory (LANL), Kansas City expansion efforts, and UPF testing and transition to operations. In addition, the request continues to support the initiative to replace the aging Argus system with a modern security system (Caerus) and continuous improvement initiatives through PSCOE and CSTART activities. This request also includes funding for continued efforts to recapitalize security infrastructure through Security Infrastructure Revitalization Program (SIRP) projects, addressing critical security systems and related security infrastructure and equipment refresh needs.

FY 2026 – FY 2029 Key Milestones

Physical Security Systems

- Sustain counter uncrewed aircraft system (CUAS) operation at sites possessing Category (CAT) 0/I quantities of SNM.
- Complete planned SIRP projects aligning with NNSA's priority to recapitalize security infrastructure.
- Complete Caerus core deployments and continue transition of field equipment.

Construction

- Complete the WEPAR project at the Y-12 National Security Complex (Y-12).

FY 2023 Accomplishments

- Successfully transferred all security scope to the M&O partner at NNSS.
- Successfully completed over 68,700 adjudicative actions, over 9,500 grants, and over 28,600 processing actions supporting security clearances.
- Granted over 8,000 new security clearances supporting approximately 11% year-over-year mission growth across the NNSA NSE.
- Initiated efforts to streamline security approvals for medically necessary personal electronic devices to be introduced into specific secure areas.
- Achieved initial operating capability for CUAS platforms installed at NNSS and the Pantex Plant.
- Reenergized collaboration activities between DNS and the Office of Nuclear Matters within the Department of Defense's (DOD's) Office of the Under Secretary of Defense for Acquisition and Sustainment. This effort focuses on opportunities to identify and implement improvements in how the two agencies harmonize their respective nuclear security programs, including threat assessments, technology development, policy, and other areas of mutual benefit.
- Achieved Full Operating Capability for Portable Intrusion Detection System units, a rapidly deployable detection system (compensatory measure) developed in partnership with DOD.
- Broke ground on the Quadrant 1 Perimeter Intrusion Detection and Assessment System (PIDAS) refresh and completed the Post 8 Booth Replacement SIRP projects at Y-12.
- Developed, tested, and implemented Local Area Nuclear Material Accountability System (LANMAS) software enhancements at all user sites.
- Co-led the Enduring Organizational Improvement Initiative for the Governance and Management: Risk Management sub-group. NNSA senior leadership recognized the team for identifying safety and security requirements that could be retired permanently or modified to improve efficiency without increasing risk.

Defense Nuclear Security
Operations and Maintenance

Description
DNS Operations and Maintenance integrates personnel, equipment, and procedures to protect physical assets and resources against theft, sabotage, diversion, or other criminal acts. Each NNSA contractor partner has an approved Site Security Plan (SSP) detailing protection measures and resources needed to protect site security interests.

PFs include duties, specialized training, performance testing, facilities, equipment, weapons/firearms, ammunition, vehicles, and other expenses. These forces are each site's primary frontline protection and consist of armed, uniformed officers. PF officers are integral to a site's security posture and are trained in tactics and techniques necessary to protect NNSA sites.

Physical Security Systems include the highest priority SIRP projects, CUAS, intrusion detection and assessment systems, performance testing and certification/recertification, access control systems, barrier and delay mechanisms, canine explosive detection programs, and tactical systems. Many systems are well beyond their designed lifecycles and require increased maintenance and testing. Additional investments in critical security systems and infrastructure upgrade projects are necessary to sustain these systems. This subprogram includes funding for PSCOE at Sandia National Laboratories in New Mexico, the centrally managed Argus program, and the effort to replace the aging centrally managed Argus system with Caerus, a modern security system at sites with CAT I quantities of SNM.

Table 1 shows the plans for the SIRP projects to be executed in FYs 2025–2029. Other than PIDAS vehicle barrier upgrades, SIRP projects do not qualify as minor construction. Instead, SIRP projects include refreshing sensors, cameras, lighting, communication, and smaller capital equipment projects. The urgent necessity to repair systems with the highest risk of failure is driving this requirement.

Table 1

Planned FY 2025-2029 SIRP Project Allocations by Site (Dollars in Millions)		
Site	**Project Name**	**FY 2025 Allocation ($M)**
NNSS	Device Assembly Facility: Design/Implementation for Protected Area revitalization work, includes PIDAS and sensor revitalization	$42.875
Total, FY 2025		**$42.875**
Site	**Project Name**	**FY 2026 Allocation ($M)**
Pantex	Zone 12 North PIDAS: Sensor revitalization, camera replacement, and camera tower replacement (includes power, fiber, network, sensors, and fences)	$29.25
Pantex	Zone 12 East PIDAS: Sensor revitalization, camera replacement, and camera tower replacement (includes power, fiber, network, sensors, and fences)	$6.85
Total, FY 2026		**$36.10**

Planned FY 2025-2029 SIRP Project Allocations by Site (Dollars in Millions)		
Site	**Project Name**	**FY 2027 Allocation ($M)**
Pantex	Zone 12 East PIDAS: Sensor revitalization, camera replacement, and camera tower replacement (includes power, fiber, network, sensors, and fences)	$17.839
Pantex	Zone 4 South PIDAS: Design and Implementation: Sensor revitalization, camera replacement, and camera tower replacement (includes power, fiber, network, sensors, and fences)	$23.4
Y-12	Material Access Area Booth Replacements	$5.63
Total, FY 2027		**$46.869**
Site	**Project Name**	**FY 2028 Allocation ($M)**
Y-12	Material Access Area Booth Replacements	$5.209
Pantex	Zone 4 South PIDAS: Design and Implementation: Sensor revitalization, camera replacement, and camera tower replacement (includes power, fiber, network, sensors, and fences)	$26.0
Pantex	Zone 4 Vehicle Barrier	$11.73
Total, FY 2028		**$42.939**
Site	**Project Name**	**FY 2029 Allocation ($M)**
Pantex	Zone 12 Material Access Area Phase I	$12.193
Pantex	Zone 12 Entry Control Facility	$8.12
Pantex	Zone 4 West PIDAS: Sensor revitalization, camera replacement, and camera tower replacement (includes power, fiber, network, sensors, and fences)	$19.34
Total, FY 2029		**$39.653**

Information Security provides classification guidance, technical surveillance countermeasures, operations security, and classified matter protection and control.

Personnel Security includes access authorizations, badging, the Human Reliability Program, classified and unclassified visits, and foreign visits and assignments. It encompasses the administrative support for the site clearance process, including security clearance determinations at each site.

Material Control and Accountability controls and accounts for special and alternative nuclear materials through measurements, quality assurance, accounting, containment, surveillance, and physical inventory. This activity also includes the LANMAS software application and training, and operational support provided to DOE and NNSA sites and facilities.

Security Program Operations and Planning includes the development of budgets, responses to audits and information requests, SSPs, vulnerability/risk assessments, and performance testing and assurance activities. Additionally, it includes security incident and reporting management, security surveys and self-assessments, activities related to deviation requests, and control of security technology transfer activities. Security Program Operations and Planning also supports facility clearance processing and Foreign Ownership, Control, or Influence determinations for security contracts.

Operations and Maintenance
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Operations and Maintenance $868,172,000	**Operations and Maintenance $1,126,000,000**	**Operations and Maintenance +$257,828,000**
Protective Forces $460,937,000	**Protective Forces $618,292,000**	**Protective Forces +$157,355,000**
• Maintained PFs to meet protection requirements based on approved vulnerability and risk assessments. • Supported refined FY 2023 UPF security requirements. • Supported FY 2023 LANL Pit Production security requirements.	• Maintains PFs to meet protection requirements based on approved vulnerability and risk assessments. • Supports FY 2025 requirements associated with sustaining the core security portfolio. • Supports FY 2025 mission growth, including support for UPF, LANL Pit Production, and Kansas City National Security Campus (KCNSC) expansion security requirements.	• Includes increases associated with mission growth across NNSA's NSE, including support for pit production, UPF preparation efforts, and KCNSC expansion. • Reflects escalation and labor wage increases, as well as support for increased resource needs to sustain Core Security requirements. • Includes transition of SRS S&S scope to NNSA.
Physical Security Systems $168,039,000	**Physical Security Systems $205,133,000**	**Physical Security Systems + $37,094,000**
• Funded preventive and corrective maintenance for physical security systems and infrastructure at NNSA sites and provided protection against threats. • Supported highest priority SIRP projects. • Included funding for highest priority continuous improvement initiatives through PSCOE. • Supported Caerus development. • Sustained CUAS operation at sites possessing CAT 0/I quantities of SNM. • Supported refined FY 2023 UPF security requirements. • Supported FY 2023 LANL Pit Production security requirements.	• Funds preventive and corrective maintenance for physical security systems and infrastructure at NNSA sites and provides protection against threats. • Enables execution of SIRP. • Includes funding for continuous improvement initiatives through PSCOE. • Supports the completion of Caerus development and initiates efforts to deploy across the NSE. • Sustains CUAS operation at sites possessing CAT 0/I quantities of SNM. • Supports FY 2025 mission growth, including support for UPF, LANL Pit Production, and KCNSC expansion security requirements.	• Reflects support for SIRP projects and PSCOE initiatives. • Includes increases associated with mission growth across NNSA's NSE, including support for pit production, UPF preparation efforts, and KCNSC expansion. • Reflects escalation and labor wage increases, as well as support for increased resource needs to sustain Core Security requirements. • Includes transition of SRS S&S scope to NNSA.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Information Security $61,239,000	**Information Security $73,793,000**	**Information Security +$12,554,000**
• Maintained an information protection program and sustained implementation of DOE Order 470.6, *Technical Security Program.* • Supported FY 2023 LANL Pit Production security requirements.	• Maintains an information protection program and sustains implementation of DOE Order 470.6, *Technical Security Program.* • Supports FY 2025 mission growth, including support for UPF, LANL Pit Production, and KCNSC expansion security requirements. • Supports the DNS managed technical surveillance countermeasures centralized contract.	• Includes increases associated with mission growth across NNSA's NSE, including support for pit production, UPF preparation efforts, and KCNSC expansion. • Reflects escalation and labor wage increases, as well as support for increased resource needs to sustain Core Security requirements. • Includes transition of SRS S&S scope to NNSA.
Personnel Security $52,342,000	**Personnel Security $70,363,000**	**Personnel Security +$18,021,000**
• Maintained a personnel security program while implementing efficiencies in a risk-based manner. • Supported FY 2023 LANL Pit Production security requirements.	• Maintains a personnel security program while implementing efficiencies in a risk-based manner. • Supports FY 2025 mission growth, including support for UPF, LANL Pit Production, and KCNSC expansion security requirements. • Maintains and sustains the Clearance Action Tracking System.	• Includes increases associated with mission growth across NNSA's NSE, including support for pit production, UPF preparation efforts, and KCNSC expansion. • Reflects escalation and labor wage increases, as well as support for increased resource needs to sustain Core Security requirements. • Includes transition of SRS S&S scope to NNSA.
Material Control and Accountability $45,125,000	**Material Control and Accountability $55,930,000**	**Material Control and Accountability +$10,805,000**
• Provided for control and accountability of special and alternative nuclear materials and maintained a level of effort critical to NNSA's layered protection program. • Sustained LANMAS software. • Supported refined FY 2023 UPF security requirements. • Supported FY 2023 LANL Pit Production security requirements.	• Provides for control and accountability of special and alternative nuclear materials and maintains a level of effort that is a critical part of NNSA's layered protection program. • Sustains LANMAS software. • Supports FY 2025 mission growth, including support for UPF, LANL Pit Production, and KCNSC expansion security requirements.	• Includes increases associated with mission growth across NNSA's NSE, including support for pit production, UPF preparation efforts, and KCNSC expansion. • Reflects escalation and labor wage increases, as well as support for increased resource needs to sustain Core Security requirements. • Includes transition of SRS S&S scope to NNSA.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Security Program Operations and Planning **$80,490,000**	**Security Program Operations and Planning** **$102,489,000**	**Security Program Operations and Planning** **+$21,999,000**
• Maintained SSPs, risk/vulnerability assessment capabilities, budget development, management of site programs for incidents of security concern, and security awareness programs. • Included funding for highest priority continuous improvement initiatives through CSTART. • Supported refined FY 2023 UPF security requirements. • Supported FY 2023 LANL Pit Production security requirements.	• Maintains SSPs, risk/vulnerability assessment capabilities, budget development, management of site programs for incidents of security concern, and security awareness programs. • Supports FY 2025 mission growth, including support for UPF, LANL Pit Production, and KCNSC expansion security requirements.	• Includes increases associated with mission growth across NNSA's NSE, including support for pit production, UPF preparation efforts, and KCNSC expansion. • Reflects escalation and labor wage increases, as well as support for increased resource needs to sustain Core Security requirements. • Includes transition of SRS S&S scope to NNSA.

Description

DNS construction supports critical physical security infrastructure with the NNSA NSE. The WEPAR project will install a new PIDAS section to reduce the Y-12 Protected Area by approximately 50% and integrate with UPF. Critical Decision-2/3 (CD-2/3, Approve Performance Baseline and Start of Construction) was approved in January 2021. Construction began in April 2021. The WEPAR project experienced increased costs and schedule delays attributable to both external and internal factors such as a defaulted subcontractor, challenging site interfaces, design and execution adjustments for as found site conditions, and supply chain issues. In addition, planning and coordination of outages necessary to support utility scope were underestimated at CD-2/3 as compared to actuals. This culminated in a Baseline Change Proposal (BCP), approved on 08 February 2024, to increase the approved Performance Baseline (PB) to a Total Project Cost (TPC) of $265 million (M) and CD-4 of April 2028.

Construction
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Construction $3,928,000	**Construction $54,000,000**	**Construction +$50,072,000**
• Supported ongoing construction efforts for the WEPAR project.	• Supports continuing projects efforts. • Supports interface with UPF Line-Item project. • Supports DOE-EM D&D.	• Project encountered integration impacts with UPF and SIRP. • Reflects excavation/soil issues. • Includes electrical subcontract issues.

Defense Nuclear Security
Capital Equipment ($K)

	Total	Prior Years	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 vs FY 2023 ($)
Capital Equipment (> $500K)						
Total Non-MIE Capital Equipment (TEC <$10M)	N/A	N/A	1,524	1,640	1,722	+198
Total, Capital Equipment	**N/A**	**N/A**	**1,524**	**1,640**	**1,722**	**+198**

Outyears for Capital Equipment Summary ($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
Capital Equipment (> $500K)					
Total Non-MIE Capital Equipment (TEC <$10M)	1,777	1,814	1,852	1,891	N/A
Total, Capital Equipment	**1,777**	**1,814**	**1,852**	**1,891**	**N/A**

Defense Nuclear Security
Other Information ($K)

Full Cost Recovery Estimates

The Budget Request provides direct funding for mission-based DNS programs. Strategic Partnership Projects (SPPs) will continue to fund an allocable share of the base program through full cost recovery. Extraordinary security requirements for SPPs, such as dedicated security for special projects or exercises on an extended basis, will be a direct charge to those customers.

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted ($)	FY 2025 Request vs FY 2023 Enacted (%)
Site					
Kansas City National Security Campus	1,738	1,896	1,398	-340	-19.6%
Lawrence Livermore National Laboratory	10,820	11,047	11,000	+180	1.7%
Los Alamos National Laboratory	6,000	6,171	4,531	-1,469	-24.5%
NNSA Production Office	2,479	3,641	4,521	+2,042	82.4%
Nevada National Security Sites	800	1,500	1,100	+300	37.5%
Sandia National Laboratories	24,475	24,105	23,927	-548	-2.2%
Total	**46,312**	**48,360**	**46,477**	**+165**	**0.4%**

17-D-710 West End Protected Area Reduction
Y-12 National Security Complex Oak Ridge Tennessee
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History:

Summary:

The West End Protected Area Reduction (WEPAR) project is responsible for installation of a new Perimeter Intrusion Detection and Assessment System (PIDAS) section to reduce the Y-12 National Security Complex Protected Area (PA) by approximately 50%. The project consists of three main parts: PIDAS (H Road and Entry Control Facility), West End Security Transition (WEST), and Legacy PIDAS Demolition.

The Fiscal Year (FY) 2025 Request for the WEPAR Project is $54,000,000 for construction of the new PIDAS, engineering and performance testing, government acceptance testing, transition to operations, and Legacy PIDAS Demolition. Critical Decision (CD)-2/3 was approved on January 11, 2021, by the Associate Administrator for Defense Nuclear Security with a Total Project Cost (TPC) of $159,850,000 and a CD-4 approval of July 2025. A Baseline Change Proposal (BCP) increasing the Performance Baseline (PB), TPC to $265,000,000 and extending CD-4 to April 2028, both at the 95% confidence level, was approved by the Chief Executive on February 8, 2024. A Federal Project Director (FPD) has been assigned to this project.

This project was initiated in FY 2018. This Construction Project Data Sheet (CPDS) is an update of the FY 2024 CPDS and does not include a new start. The BCP was based on final design, construction contracts, and project performance as of August 2023. Project cost and schedule contingency is based on risks associated with interfaces with other Y-12 construction projects and concurrent Y-12 operations. The PB was validated through an External Independent Review (EIR) and an Independent Cost Review (ICR) completed July 21, 2023. The $54,000,000 requested in FY 2025 will support tying in the WEPAR PIDAS with the Uranium Processing Facility (UPF) project on a schedule necessary to allow UPF to begin transition to operations.

Significant Changes:

The WEPAR project will exceed both the CD-2/3 schedule and TPC. The BCP referenced above increased the TPC to $265,000,000 and extended CD-4 to April 2028. The project supports ongoing work by the DOE Office of Environmental Management (EM) to stabilize and characterize buildings 9204-04 (Beta-4) and 9201-05 (Alpha-5) in preparation for decontamination and demolition (D&D).

The increased cost and delays are attributed to both external and internal factors such as challenging site interfaces, design and execution adjustments for as found site conditions, and default of the electrical subcontractor. The site interface issues include, but are not limited to, projects that are years behind schedule and either turned over late or have yet to turn over their construction footprint to the WEPAR project which prevents construction in these areas. Site interface issues are preventing the tie in and testing of WEPAR systems, specifically the WEST scope. Site interfaces also include planning and coordination of outages necessary to support utility scope that were underestimated at CD-2/3 as compared to actuals. As found site conditions include unforeseen contamination (mercury, radioactive material, asbestos, and polychlorinated biphenyls), discovering ten times more communication lines in the project footprint than expected, and the continuing difficulty to adjust designs and execution strategies to account for as found site conditions. The default of the electrical subcontractor (a key component of most facets of work) required the project to bring a new electrical subcontractor on board. Electrical critical path work continues utilizing the replacement subcontractor with a final price four times the original subcontract price. Based on these factors, the project cost has increased by about 65% (new TPC of $265 million) and the schedule could extend by as much as 2.75 years.

Regarding project risk management, DOE/NNSA continues to assess the potential impacts on TPC and the CD-4 date of market conditions (e.g., tight labor market, supply chain delays, and inflation) and internal challenges (e.g., integration with aging infrastructure, site utility limitations, synchronization of multiple site projects and interfacing work fronts).

Construction projects across the nation are experiencing continuing impacts and the Nuclear Security Enterprise is especially susceptible to market conditions due to the skills and clearances required for designers and craft personnel, and the small, domestic, specialty suppliers often required. NNSA remains actively engaged to minimize further cost increases and schedule delays.

Critical Milestone History

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2021	09/06/2017	07/25/2018	12/13/2018	1Q FY 2021	2Q FY 2020	1Q FY 2021	N/A	3Q FY 2024
FY 2022	09/06/2017	07/25/2018	12/13/2018	01/11/2021	01/11/2021	01/11/2021	N/A	07/31/2025
FY 2023	09/06/2017	07/25/2018	12/13/2018	01/11/2021	01/11/2021	01/11/2021	N/A	07/31/2025
FY 2024	09/06/2017	07/25/2018	12/13/2018	01/11/2021	01/11/2021	01/11/2021	N/A	07/31/2025
FY 2025	09/06/2017	07/25/2018	12/13/2018	01/11/2021	01/11/2021	01/11/2021	N/A	04/30/2028

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range
Conceptual Design Complete – Actual date the conceptual design was completed
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
Final Design Complete – Estimated/Actual date the project design will be/was complete (d)
CD-3 – Approve Start of Construction
Deactivation and Decommissioning (D&D) Complete – N/A
CD-4 – Approve Start of Operations or Project Closeout

Project Cost History

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2021	19,540	123,270	142,810	17,040	N/A	17,040	159,850
FY 2022	12,710	137,318	150,028	9,822	N/A	9,822	159,850
FY 2023	12,710	137,318	150,028	9,822	N/A	9,822	143,850[a]
FY 2024	12,710	149,318	162,028	9,822	N/A	9,822	171,850
FY 2025	12,710	242,468	255,168	9,832	N/A	9,832	265,000

2. Project Scope and Justification

Scope

The project will design and move the Y-12 National Security Complex western PIDAS boundary, design and construct a pedestrian and vehicle portal, secure facilities that fall outside of the newly established PA and demolish legacy PIDAS structures. During the conceptual design phase, feasible options were evaluated to ensure the project scope was correctly sized to meet the site's critical mission needs. The WEPAR project will eliminate approximately 70 acres from the Y-12 PA. The new PIDAS leg will be approximately 1,750 linear feet located on the current H-road footprint and parallel to North First Street. This will provide a reduction in current PIDAS by approximately 8,000 linear feet; above-grade components of the existing/abandoned 8,000 linear feet will be demolished as part of the project. Scope also includes refurbishing legacy PIDAS south of the UPF and converting four building areas to Limited Areas (LA).

Justification And Mission Need

[a] The FY 2023 Request assumed reductions in government contingency and contractor management reserve below the approved baseline. Adjustments have been made to outyear funding amounts.

The removal of 70 acres from the PA will allow DOE/NNSA to avoid ongoing security operation requirements that are instituted within a PA; decrease costs for legacy facility operation, maintenance, and demolition; and will reduce the cost of any new facility construction to support potential mission needs in the future. This project will allow the DOE EM to disposition buildings Beta-4 and Alpha-5 outside of the PA. Alpha-5 is NNSA's highest risk excess facility. D&D of Beta-4 outside of the PA will save an estimated $250 million (circa 2017 estimate).

The WEPAR project is being conducted in accordance with the project management requirements in DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*. Project cost and schedule contingency is based on risks associated with other Y-12 construction projects interfaces and concurrent Y-12 operations. Funds appropriated under this data sheet are for construction and may be used for contracted support services to the Federal Program Manager and the FPD to conduct independent assessments of the planning and execution of this Project required by DOE O 413.3B and to conduct technical reviews of design and construction documents.

Key Performance Parameters (KPPs)

The KPPs represent the minimum acceptable performance that the project must achieve. Achievement of the KPPs will be a prerequisite for approval of CD-4, Project Completion.

Table 5: Key Performance Parameters (KPP)

Item No.	Requirements	Key Performance Parameter	Completion Criteria
KPP-1	Provide a new PIDAS boundary	Detection and assessment capability as required by DOE O 473.3A that provides access to and reduces the Y-12 protected area	• Completion of construction in accordance with approved design (System Requirements Document for the WEPAR Project, SRD YAREA-PIDAS-0003 000 02)) • Completion of engineering and performance testing (Transition Plan for the Y-12 WEPAR Project, PLN YAREA-PIDAS-0008 001) • Completion of Government acceptance testing (Transition Plan for the Y-12 WEPAR Project, PLN YAREA-PIDAS-0008 001) • Completion of Readiness Affirmation RM.014, Performance criteria and prerequisites are met, actions required for operation are completed, and outstanding issues are resolved. • Acceptance by Y-12 ODFSA.
KPP-2	Provide a new Entry Control Facility (ECF)	Control point will provide, at least 500 pedestrians and 200 vehicles daily, access control and entry/exit inspections as required by DOE O 473.3A	
KPP-3	Install annunciator agnostic communications that are compatible with current system	Satisfactorily completes NNSA certification and evaluation in compliance with DOE O 473.3A	
KPP-4	Provide Secure storage in Buildings 9720-25, 9720-33, 9811-1, and 9720-59	Buildings meet DOE O 473.A requirements	

In addition to the 4 KPPs in the above table. The project is also currently responsible for the demolition of Post 33 and the current Legacy PIDAS bed west of H Road (Zones 1 to 4 and 36 to 56). Post 33 demo will be complete when all structures have been removed to grade (concrete foundations will **not** be removed) and all sensors and barriers have been removed. PIDAS demolition will be complete when fencing, subsurface sensors and vehicle barriers have been removed. The PIDAS bed will be seeded with grass. The elevated PIDAS bed will **not** be returned to natural grade.

3. Financial Schedule

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2017	2,500	2,500	0
FY 2018	10,210	10,210	0
FY 2019	0	0	3,462
FY 2020	0	0	7,305
FY 2021	0	0	1,943
Total Design	**12,710**	**12,710**	**12,710**
Construction			
FY 2017	0	0	0
FY 2018	43,390	43,390	0
FY 2019	0	0	0
FY 2020	25,000	25,000	0
FY 2021	26,000	26,000	18,646
FY 2022	23,000	23,000	39,270
FY 2023	16,971[a]	16,971	46,316
FY 2024	28,000	28,000	34,003
FY 2025	54,000	54,000	50,000
FY 2026	10,100	10,100	30,000
FY 2027	0	0	6,000
FY 2028	0	0	2,226
FY 2029	0	0	0
Total Construction	**226,461**	**226,461**	**226,461**
TEC			
FY 2017	2,500	2,500	0
FY 2018	53,600	53,600	0
FY 2019	0	0	3,462
FY 2020	25,000	25,000	7,305
FY 2021	26,000	26,000	20,589
FY 2022	23,000	23,000	39,270
FY 2023	16,971[a]	16,971	46,316
FY 2024	28,000	28,000	34,003
FY 2025	54,000	54,000	50,000
FY 2026	10,100	10,100	30,000
FY 2027	0	0	6,000
FY 2028	0	0	2,226
FY 2029	0	0	0
Total TEC	**239,171[b]**	**239,171**	**239,171**

[a] Reflects internal reprogramming of $13M.

[b] The Financial Schedule does not match the total cost estimate as approved in the BCP. Funding provided for the project in the FY 2024 Energy and Water Development and Related Agencies Appropriation Bill meets project needs consistent with the approved BCP for FY 2024. Adjustments will be made to future budget requests, as necessary, to align with the total cost estimate.

	($K)		
	Budget Authority (Appropriations)	**Obligations**	**Costs**
Other Project Costs (OPC)			
FY 2017	6,100	6,100	0
FY 2018	0	0	1,743
FY 2019	0	0	915
FY 2020	0	0	814
FY 2021	0	0	276
FY 2022	0	0	547
FY 2023	3,722	3,722	40
FY 2024	0	0	500
FY 2025	0	0	1,700
FY 2026	10	10	1,600
FY 2027	0	0	1,200
FY 2028	0	0	497
FY 2029	0	0	0
Total, OPC	**9,832**	**9,832**	**9,832**
Total Project Costs (TPC)			
FY 2017	8,600	8,600	0
FY 2018	53,600	53,600	1,743
FY 2019	0	0	4,377
FY 2020	25,000	25,000	8,119
FY 2021	26,000	26,000	20,865
FY 2022	23,000	23,000	39,817
FY 2023	20,693[a]	20,693	46,356
FY 2024	28,000	28,000	34,503
FY 2025	54,000	54,000	51,700
FY 2026	10,110	10,110	31,600
FY 2027	0	0	7,200
FY 2028	0	0	2,723
FY 2029	0	0	0
Total TPC	**249,003[b]**	**249,003**	**249,003**

[a] Reflects internal reprogramming of $13M.

[b] The Financial Schedule does not match the total cost estimate as approved in the BCP. Funding provided for the project in the FY 2024 Energy and Water Development and Related Agencies Appropriation Bill meets project needs consistent with the approved BCP for FY 2024. Adjustments will be made to future budget requests, as necessary, to align with the total cost estimate.

4. Details of Project Cost Estimate

($K)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	12,710	12,710	12,710
Contingency	0	0	0
Total, Design	12,710	12,710	12,710
Construction			
Site Work	110,000	30,000	22,781
Equipment	12,878	8,000	7,879
Construction	105,000	98,838	71,698
D&D	5,000	2,500	2,433
Contingency	9,580	9,980	32,527
Total, Construction	242,458	149,318	137,318
Total Estimated Cost	255,168	162,028	150,028
Contingency, TEC	9,580	9,980	32,527
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	2,189	2,189	2,189
Conceptual Design	532	532	532
Other OPC Costs	5,691	5,681	5,681
Contingency	1,420	1,420	1,420
Total, OPC	9,832	9,822	9,822
Contingency, OPC	1,420	1,420	1,420
Total Project Cost	265,000[a]	171,850	159,850
Total Contingency (TEC+OPC)	11,000	11,400	33,947

[a] Section 4 estimate is consistent with the BCP approved February 2024.

5. Schedule of Appropriations Requests

($K)

Request Year	Type	Prior Years	FY2023	FY 2024	FY2025	FY2026	FY 2027	FY 2028	FY 2029	Total
FY 2021	TEC	134,000	8,810	0						142,810
	OPC	12,600	3,590	850						17,040
	TPC	146,600	12,400	850	0	0	0	0	0	159,850
FY 2022	TEC	130,100	19,928	0						150,028
	OPC	6,100	3,722	0						9,822
	TPC	136,200	23,650	0	0	0	0	0	0	159,850
FY 2023	TEC	130,100	3,928	0						134,028
	OPC	6,100	3,722	0						9,822
	TPC	136,200	7,650	0	0	0	0	0	0	143,850
FY 2024	TEC	130,100	3,928	28,000						162,028
	OPC	6,100	3,722	0						9,822
	TPC	136,200	7,650	28,000	0	0	0	0	0	171,850
FY 2025	TEC	130,100	16,971[a]	28,000	54,000	10,100	0	0	0	239,171
	OPC	6,100	3,722	0	0	10	0			9,832
	TPC	136,200	20,693	28,000	54,000	10,110	0	0	0	249,003[b]

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	3Q FY 2028
Expected Useful Life (number of years)	25
Expected Future Start of D&D of this capital asset (fiscal quarter)	3Q FY 2053

($K)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations and Maintenance	2,100	2,100	63,900	63,900

[a] Reflects internal reprogramming of $13M.

[b] The Financial Schedule does not match the total cost estimate as approved in the BCP. Funding provided for the project in the FY 2024 Energy and Water Development and Related Agencies Appropriation Bill meets project needs consistent with the approved BCP for FY 2024. Adjustments will be made to future budget requests, as necessary, to align with the total cost estimate.

7. D&D Information

The new area being constructed in this project is replacing existing facilities and includes an Entry Control Facility (~5,000 ft^2). The costs of D&D of the facilities being replaced are included in the costs of this construction project. The project scope includes the removal and disposition of approximately 8,000 linear feet of legacy PIDAS and Post 33 (~1,000 ft^2) once WEPAR is certified. Completion of this project will allow DOE EM to D&D Buildings 9204-04 (Beta-4) and 9201-05 (Alpha-5), which total almost 1 million ft^2, outside of the PA.

	Square Feet (rounded to nearest 1,000)
New area being constructed by this project at Y-12	5,000
Area of D&D in this project at Y-12	1,000
Area at Y-12 to be transferred, sold, and/or D&D outside the project, including area previously "banked"	0
Area of D&D in this project at other sites	0
Area at other sites to be transferred, sold, and/or D&D outside the project, including area previously "banked"	0
Total area eliminated	0

8. Acquisition Approach

The NNSA FPD and the Integrated Project Team are responsible for the execution of the project. The Management and Operating (M&O) contractor for Y-12 is the designated design authority and overall project manager, while the Sandia National Laboratories M&O contractor's Physical Security Center of Excellence (PSCOE) is the design agent and construction manager. The NNSA Office of Defense Nuclear Security is responsible for defining program requirements, selecting the preferred alternatives, and for any project scope changes. The NNSA Office of Infrastructure (NA-90) is responsible for providing support for alternative studies, and serves as the lead NNSA office during design, construction, and commissioning of the project. PSCOE will play a vital role in the integration of the security features. Significant coordination with the Y-12 M&O contractor will be required for physical and technical tie-ins to current systems. As part of acquisition planning, NNSA will manage the M&O performance through the DOE/NNSA Strategic Performance Evaluation and Measurement Plan (PEMP), which sets forth the criteria by which NNSA will evaluate M&O performance and upon which NNSA shall determine the amount of award fee earned.

Information Technology and Cybersecurity

Overview

The NNSA Office of the Associate Administrator for Information Management and Chief Information Officer (OCIO) is responsible for information management, information technology (IT), and cybersecurity for NNSA. The NNSA IT and Cybersecurity Program focuses on investments in technology that effectively support the Nuclear Security Enterprise (NSE). These investments are fundamentally redesigning the NNSA IT and cybersecurity environments and are providing a more resilient and agile set of capabilities that includes integrated communication, cloud infrastructure, collaboration services, and improved zero trust architectures (ZTAs). This approach aims to provide commodity services for NNSA Management and Operating (M&O) partners that improve the security of sensitive NNSA data and shared services.

To effectively achieve its mission, the NNSA OCIO has an organizational structure that includes three organizations: the Office of IT, the Office of Cybersecurity, and the Office of Mission Integration. The NNSA OCIO also collaborates and coordinates with the Department of Energy's (DOE) Office of the Chief Information Officer (DOE OCIO) on the development and deployment of IT and cybersecurity solutions to protect DOE information and information assets. Risk management, agility, trust, and partnership serve as essential guiding tenets for the NNSA OCIO, aligning people, processes, and technology while directly contributing to the success of the IT and Cybersecurity Program.

Information Technology and Cybersecurity
Funding ($K)

Italics denotes reporting level	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
Information Technology and Cybersecurity					
Cybersecurity					
Site Infrastructure	*116,404*	*116,404*	*165,493*	*+49,089*	*+42.2%*
Enterprise Operations	*112,976*	*112,976*	*214,370*	*+101,394*	*+89.7%*
Subtotal, Cybersecurity	**229,380**	**229,380**	**379,863**	**+150,483**	**+65.6%**
Information Technology	*216,274*	*216,274*	*266,137*	*+49,863*	*+23.1%*
Total, Information Technology and Cybersecurity	**445,654**	**445,654**	**646,000**	**+200,346**	**+45.0%**

Information Technology and Cybersecurity
Outyear Funding ($K)

Italics denotes reporting level	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Information Technology and Cybersecurity				
Cybersecurity				
Site Infrastructure	*186,672*	*195,248*	*208,759*	*217,653*
Enterprise Operations	*230,343*	*248,444*	*235,322*	*270,463*
Subtotal, Cybersecurity	**417,015**	**443,692**	**444,081**	**488,116**
Information Technology	*287,919*	*304,771*	*308,006*	*310,218*
Total, Information Technology and Cybersecurity	**704,934**	**748,463**	**752,087**	**798,334**

Information Technology and Cybersecurity
Explanation of Major Changes ($K)

	FY 2025 Request vs FY 2023 Enacted
Information Technology and Cybersecurity	
Cybersecurity: The funding increase reflects investments in ZTA enablers, operational technology capabilities, and additional cybersecurity tools and services through the Enterprise Operations subprogram. Site Infrastructure subprogram funding supports labor rate and workforce growth at the laboratories, plants, and sites to address significant increases in technology use as the NNSA mission has expanded, as well as the transfer of responsibility of Savannah River Site (SRS) to NNSA	**+150,483**
Information Technology: The funding increase supports IT investments such as the continued modernization of IT infrastructure, network architecture, and classified IT systems, including the Emergency Communications Network (ECN). The increase includes the cost associated with classified infrastructure and capabilities, implementation of cloud infrastructure, unclassified IT services and the transfer of responsibility of SRS to NNSA. Reflecting NNSA OCIO priorities, investments will enhance unclassified and classified collaboration tools and network services, provide redundancy, and improve performance for mission partners globally.	**+49,863**
Total, Information Technology and Cybersecurity	**+200,346**

Information Technology and Cybersecurity
Cybersecurity

Description
The Cybersecurity Program is organized into two subprograms: Site Infrastructure and Enterprise Operations.

The Site Infrastructure subprogram supports cybersecurity operations and activities at NNSA sites. Funds provided under the Site Infrastructure subprogram sustain local cybersecurity operations at the laboratories, plants, and sites in support of NNSA mission priorities and in accordance with DOE and NNSA policy. Approximately 85% of these funds directly support cybersecurity workforce at the laboratories, plants, and sites. Recent initiatives have focused on improving the detection and resolution of cyber risks and issues including, but not limited to, operational technologies and industrial control systems that support the mission of NNSA.

The Enterprise Operations subprogram provides essential cybersecurity support and operations to the NSE through active defensive cyber operations, assessments (including exercises, penetration testing, and Red and Blue Teaming tests of NNSA systems and incident response procedures), policy, management, planning, and training. NNSA manages an enterprise cybersecurity operations center (SOC) that provides 24/7/365 cybersecurity services to NNSA and DOE networking enclaves. The NNSA SOC provides near real-time network defense and incident response services that protect these classified and unclassified enclaves and information from attacks. As a participant with DOE's Integrated Joint Cybersecurity Coordination Center (iJC3) Program, the NNSA SOC supports enterprise-level cyber threat management and situational awareness for DOE. The Enterprise Operations subprogram is also responsible for developing and advancing policies and initiatives that support short and long-term solutions to specific cybersecurity requirements at NNSA sites and headquarters locations. The Enterprise Operations subprogram focuses on emerging technologies and leveraging existing technology resources to create a more secure environment, including the implementation of ZTA enablers. NNSA continues to transition from a defense-in-depth cybersecurity posture towards ZTA in partnership with NNSA's laboratories, plants, and sites.

An enterprise-level identity model, strong multifactor authentication (MFA), and a centralized monitoring and analysis capability function to secure the infrastructure system required to sustain the stockpile stewardship program and other core information assets, networks, applications, and systems. The protected networks provide a broad base of security and network services that include application integration, authentication services, directory services, enterprise data resource management, the NNSA SOC and network operations center (NOC), identity and access management (IAM), public key infrastructure (PKI), and security monitoring and intrusion detection.

The Cybersecurity Program provides critical resources to address the requirements of Executive Order (EO) 14028, *Improving the Nation's Cybersecurity*, the Administration's shift towards ZTA, and Office of Management and Budget (OMB) Memoranda. Additionally, investments align with the roadmap of recommendations resulting from an independent third-party assessment of NNSA's Cybersecurity Program. Informed by these cybersecurity requirements, NNSA continues to invest in people and in systems to reduce cyber risks. Such efforts are building NNSA's capacity to meet evolving IT and cybersecurity threats, gain operational efficiencies, and achieve enterprise-wide improvements for IT infrastructure. By developing a unified approach to cybersecurity spending at the laboratories, plants, and sites, NNSA has established stronger protections across the NSE.

Highlights of the FY 2025 Budget Request
- Implement the Administration's cybersecurity priorities and requirements. This includes continuing to transition from a defense-in-depth cybersecurity posture towards ZTA by investing in enabling technologies such as MFA, encryption of systems, and other EO 14028 pillars.
- Continue orchestration and automation of cybersecurity capabilities, leveraging investments in cybersecurity tools and capabilities such as Endpoint Detection and Response (EDR) and other ZTA enablers.

- Continue to evolve integrated communications capabilities to enhance information sharing between other government agencies (OGAs) and NNSA, facilitating expanded partnerships, the sharing of lessons learned, and modernization of mission execution.
- Assess cybersecurity threats to NNSA information assets and prioritize risk management activities to increase information assurance.
- Counter malicious actors and nation states through detection, prevention, and disruption of suspicious activity using continuous monitoring activities and innovative tools.
- Respond quickly and effectively to cybersecurity incidents through coordinated enterprise-wide response efforts.
- Strengthen the resiliency of the NSE by expanding supply chain management collaboration and supply chain risk management.
- Finalize modernization efforts of Enterprise Secure Computing (ESC) environments by enhancing core services and collaborative capabilities, consolidating disparate network infrastructure, and beginning transition activities.
- Continue investment and deployment of Security Data Integration (SDI) across laboratories, plants, and sites.
- Continue establishment of artificial intelligence and machine learning (AI/ML) cybersecurity capabilities, integrating with SDI for a proactive defensive posture against evolving cyber defense capabilities.
- Support the separation of the Y-12 National Security Complex and Pantex Plant and the transfer of responsibility for the SRS to NNSA.
- Continuing expansion of Red and Blue Team cybersecurity operations beyond external assessments and local efforts to an enterprise approach.

FY 2026 – FY 2029 Key Milestones

- Implement cloud-based Enterprise Governance Risk and Compliance (eGRC), enhancing the ability to analyze and share critical cybersecurity risk information and improving enterprise situational awareness.
- Invest in classified mobile solutions, improving critical capabilities to improve manufacturing and logistics systems and for senior leaders to effectively communicate and collaborate.
- Expand M&O cybersecurity programs in support of pit production.
- Implement Controlled Unclassified Information (CUI) protocols to safeguard information.
- Augment cybersecurity resources for NNSA Field Offices to reduce backlog of information security requests and provide for consistent implementation of automatic authorization.
- Enhance NNSA's data sharing capabilities, developing a series of frameworks that focus on sharing data with OGAs and stakeholders in line with EO 14028.
- Further expand the NNSA Center of Excellence (COE) for Threat Intelligence to DOE elements, enhancing DOE's threat hunting capabilities.
- Reinforce the security posture for highly classified information and enhance the capability to share information with the Department of Defense (DOD) by modernizing the network architecture, as well as upgrading and enhancing security.
- Continue developing and implementing a cybersecurity framework for IT to include network-connected operational technologies and systems.

FY 2023 Accomplishments

- Institutionalized cyber exercises to test NNSA's security posture.
- Executed external Red Team testing of NNSA OCIO's internet facing systems.
- Completed a pilot for augmenting NNSA OCIO's internal Red Team.
- Addressed findings from the NNSA Independent Cyber Assessment Report, including improving recruitment and retention of cybersecurity staff across NNSA, enhancing real-time monitoring capabilities, and expanding proven COE offerings.
- Developed an operational technology strategy.
- Completed a pilot for implementing an operational technology monitoring capability.
- Completed a pilot for utilizing AI analysis of traffic allowed through existing cybersecurity capabilities.
- Implemented Continuous Diagnostics and Mitigation (CDM) capabilities and reporting to DOE.

- Shifted enterprise procurements to headquarters and assigned a role with responsibility to ensure timely and cost-effective procurements and renewals of enterprise capabilities.
- Began implementing an enterprise solution for EDR on unclassified and classified environments.
- Began implementing EO 14028-related roadmaps for ZTA, MFA, EDR, security logging, etc.
- Initiated a pilot for transitioning Trusted Internet Connections (TIC) functions from local implementations to an enterprise monitoring capability.
- Started an effort to leverage virtual environments to augment training and enhance student learning.
- Implemented a local instance of Automated Indicator Sharing (AIS) at the NNSA SOC as a precursor to enterprise expansion.
- Implemented collaborative communications to enable the ability of cyber defenders to chat with the Cybersecurity and Infrastructure Security Agency (CISA) and other agencies.
- Integrated a non-NNSA laboratory into the COE for Threat Intelligence to further improve the collective defense of DOE and NNSA.
- Developed and promoted workforce strategies and programs to attract, develop, and retain IT and cybersecurity professionals both among the Federal workforce and at NNSA's laboratories, plants, and sites.

Cybersecurity
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Cybersecurity $229,380,000	**Cybersecurity $379,863,000**	**Cybersecurity +$150,483,000**
Site Infrastructure $116,404,000	**Site Infrastructure $165,493,000**	**Site Infrastructure +$49,089,000**
• Maintained core cybersecurity operations at NNSA's laboratories, plants, and sites to ensure the protection of NSE information and information assets. • Enabled the achievement of Federal standards, the President's EO 14028, and DOE and NNSA policy, procedures, and guidance.	• Continues to maintain core cybersecurity operations at the laboratories, plants, and sites, and supports the transfer of responsibility for SRS to NNSA as well as the separation of Y-12 and Pantex. • Enables the cybersecurity programs at the laboratories, plants, and sites to address mission growth, addressing staffing concerns and other risks.	• The increase supports cybersecurity programs at laboratories, plants, and sites to keep pace with NNSA mission requirements, investing in workforce development and cybersecurity capability requirements.
Enterprise Operations $112,976,000	**Enterprise Operations $214,370,000**	**Enterprise Operations +$101,394,000**
• Supported cyber services including the labor, software, and hardware necessary to manage the Cybersecurity Program. The labor included areas such as accreditation and 24/7/365 security monitoring, as well as forensics and incident management and response. • Continued to transition to a managed service support contract model with discrete work scope for each task. The new approach enabled NNSA to take advantage of new and emerging technologies while maximizing efficient use of resources.	• Provides funding for the labor, software, and hardware necessary to manage the Cybersecurity Program. • Maintains a strong Cybersecurity Program by investing in critical networks, system improvements, and enterprise services, including operational technology. • Invests in ZTA enablers such as MFA, encryption-at-rest and -in-transit and logging. • Expands collaboration with the laboratories, plants, and sites and invests in CUI implementation.	• The increase in funding reflects investment in cybersecurity tools and services provided to the enterprise to meet Federal cybersecurity standards.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
• Supported enterprise efforts that leveraged research/Strategic Partnership Program (SPP) work at a site to bring a cyber function to the enterprise. The efforts were led by a primary site with interaction at each NNSA location. • Advanced an architecture and commercial classified solution for classified wireless throughout the NSE. • Provided funding for tools, procurement, and licensing for locations without the appropriate security tools to meet CDM requirements. • Supported the cybersecurity requirements outlined within EO 14028 that required compliance-based evaluation of cybersecurity.		

Information Technology and Cybersecurity
Information Technology

Description

The NNSA OCIO directs the design, development, and maintenance of all aspects of NNSA computing and provides NNSA staff with the IT resources necessary to achieve mission goals and objectives. The IT Program supports the infrastructure and protection for classified and unclassified computing networks, secure communications, applications, systems, and logical environments. It ensures electronic information and information assets are operating efficiently and effectively and are protected from unauthorized access and malicious acts that would adversely affect national and economic security. The IT Program provides enterprise-level classified computing infrastructure and unclassified applications services to NNSA Federal staff in support of the NNSA mission. The IT Program also leverages cloud-based services and solutions whenever possible to support infrastructure hosting and application development, operations, and maintenance.

IT classified computing enables DOE/NNSA laboratories and sites to communicate and share information regarding NNSA's mission. The program supports IT systems and networks and serves as DOE's computer network defense service provider for the Secret Fabric.

- The NNSA Secret Network (NSN) supports the processing of Secret/National Security Information (NSI) and the interconnection with the DOD SIPRNET.
- ECN supports DOE/NNSA mission elements to provide continuous, effective, and secure network services (data-video-voice) for all DOE/NNSA response components and are reliably maintained at rest and throughout operational emergencies.
- The Enterprise Secure Network (ESN) environment operates at the Secret/Restricted Data (S/RD) level and consists of independent site installations of standardized hardware and software integrated through a common infrastructure and shared policies and procedures.
- Other classified networks enable communication and sharing of information regarding NNSA's mission.

The investments within NNSA IT seek to modernize technology across the enterprise to enable mission success.

- Provide classified IT infrastructure enhancements and improvements to support both the nuclear security and non-nuclear security activities across the DOE enterprise.
- Leverage modern systems and secure data transfer technologies to improve collaboration and coordination.
- Increase automation capabilities to perform rapid, reliable, consistent, and secure technology deployments.
- Use new techniques and technology to achieve rapid development in a modern cloud environment.
- Partner with DOE to ensure technology services meet organizational requirements.

To think, behave, and respond as one cohesive agency with a shared, critical national security mission, it is necessary to re-engineer the telecommunications networks and improve service offerings. Such efforts outfit employees with effective communication tools and maximize efficiency, lower operational costs, remove technical barriers, and facilitate collaboration. To that end, the IT Program enhances enterprise services to support emerging technologies and the NNSA mission. Classified computing is currently deployed at NNSA and multiple DOE sites, Federal agencies, other organizations, and select allied nations. The footprint of the enterprise networks continues to expand as NNSA's mission requirements increase and/or change.

ESN serves as the base network for the classified commodity services, which entails an approach to classified collaborative computing that uses a secure Virtual Desktop Infrastructure (VDI) to facilitate information sharing among disparate DOE/NNSA entities. The IT Program consistently evaluates the site installations for areas that can be consolidated to enterprise services and centrally hosted and managed.

IT commodity-based computing infrastructure facilitates effective collaboration and information sharing for NNSA Federal employees and support contractors to execute the NNSA mission. Through regular communication with DOE/NNSA leadership, DOE IT organizations, M&O contract partners, and associates across the Federal IT community, the NNSA OCIO identified an opportunity to implement an IT strategy that leverages managed services and cloud technologies. NNSA's

focus on a managed service model enables NNSA to take advantage of new and emerging technologies while maximizing efficient use of resources. The strategy presents many opportunities to participate in economies of scale and relies on industry's rapid development and testing practices to ensure NNSA is using secure, modern technology. Additionally, NNSA may directly fund certain IT modernization projects across the enterprise to integrate innovative technology such as classified mobility and enterprise classified collaboration services or to improve cybersecurity such as resilient architectures to reduce system outages.

Highlights of the FY 2025 Budget Request

- Implement a strong and comprehensive IT Program that supports the NSE mission through the recapitalizing and modernizing of aging infrastructure.
- Implement data management and governance practices and develop common IT ecosystems across the enterprise to strengthen interoperability and data fidelity.
- Advance a managed service model that will enable and support new technologies.
- Invest in IT research and development capabilities, digital transformation and digital engineering, operational technology, and AI/ML to secure future NNSA operations.
- Strengthen inherited legacy networks, systems, and applications.
- Further implement the NNSA Application Modernization Strategy for both mission and non-mission applications.
- Support the modernization of networks and leverage cloud technologies to strengthen redundancies.
- Engage externally with OGAs and mission partners.
- Improve the reliability of video teleconferencing (VTC) capabilities for classified systems.
- Implement upgrades to the S/RD exchange and storage across the enterprise.

FY 2026 – FY 2029 Key Milestones

- Provide classified IT infrastructure enhancements and improvements to support both the nuclear security and non-nuclear security activities across the DOE enterprise.
- Develop architecture of the classified wireless network for non-pit production facilities.
- Leverage modern systems and secure data transfer technologies to improve collaboration and coordination.
- Increase automation capabilities to perform rapid, reliable, consistent, and secure technology deployments and improve business processes and user experience.
- Partner with DOE OCIO, DOE IN, M&Os, and OGAs to ensure technology services meet organizational requirements and to provide the systems, tools, training, and support to leverage NNSA data for mission requirements.
- Develop a roadmap to support and sustain advanced analytic capabilities, including AI/ML, from the research and development phase to production and deployment.

FY 2023 Accomplishments

- Implemented modernization projects to improve collaboration and communication, working closely with DOE and element Chief Information Officers (CIOs) and IT Managers to move to Windows 10 and Microsoft 365.
- Developed and implemented cloud-based services and solutions.
- Improved application development and implementation with updated tools and technologies.
- Established the NSE Data Council and implemented innovative data sharing projects.

Information Technology
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Information Technology $216,274,000	**Information Technology $266,137,000**	**Information Technology +$49,863,000**
• Supported ESC including the labor, hardware, and software to support the ESN and NSN environments managed by the NNSA OCIO with support from the M&O partners. • Continued to transition the NNSA OCIO into a managed service model, enabling NNSA to take advantage of new and emerging technologies while maximizing efficient use of resources. • Promoted modernization of network architecture, as well as upgrades and enhances security capabilities for classified systems, including ECN. • Supported IT services for NNSA Federal staff. This includes the cost of unclassified applications, software, and hardware, as well as local classified labor, software, and hardware. • Provided support for unclassified desktop commodity IT services. • Supported operation of classified networks not included in ESC with unique mission requirements that require separate systems. • Improved the reliability of VTC capabilities for classified system.	• Continues to modernize legacy classified networks, systems, and applications. • Includes further investment in capabilities like ECN. • Modernizes technology to support collaboration and innovation, including improving collaboration tools for both classified and unclassified network environments. • Continues to leverage cloud infrastructure. • Supports the transfer of responsibility for SRS to NNSA.	• The increase in funding reflects continued modernization of the network architecture and classified systems, including ECN, with a focus on improvement and modernization of the systems and user experience. • Funds the expanded use of classified commercial cloud-based technologies.

Information Technology and Cybersecurity
Other Information ($K)

Full Cost Recovery Estimates ($K)

The FY 2025 Budget Request provides direct funding for mission-driven activities to achieve IT and cybersecurity solutions. Because some support is directed to other programs for materials and services provided to agencies outside the Department, these costs will be allocated to the SPP customers as work is accomplished at the contractor site. The table below provides an estimate of costs that will be recovered from SPP customers.

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 vs FY 2023 Enacted ($)	FY 2025 vs FY 2023 Enacted (%)
Site					
Kansas City National Security Campus	1,228	1,228	1,228	+0	0.0%
Lawrence Livermore National Laboratory	2,410	2,410	3,002	+592	25%
Los Alamos National Laboratory	1,178	1,178	1,791	+613	52.0%
Nevada National Security Site	800	800	800	0	0%
NNSA Production Office	113	113	0	-113	-100%
Pantex Plant	0	0	61	+61	0%
Y-12 National Security Complex	0	0	123	+123	0%
Sandia National Laboratories	11,299	11,299	14,732	+3,433	30%
Savannah River Site	0	0	0	0	0%
Total	**17,028**	**17,028**	**21,737**	**+4,709**	**27.7%**

DEPARTMENT OF ENERGY
Funding by Site
TAS_0240 - Weapons Activities - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Argonne National Laboratory			
Dynamic Materials Properties	7,375	4,934	5,207
Assessment Science	7,375	4,934	5,207
Stockpile Research, Technology, and Engineering	7,375	4,934	5,207
Safety and Environmental Operations	30	30	0
Operating	30	30	0
Infrastructure and Operations	30	30	0
Total Argonne National Laboratory	**7,405**	**4,964**	**5,207**
Brookhaven National Laboratory			
Safety and Environmental Operations	437	437	525
Operating	437	437	525
Infrastructure and Operations	437	437	525
Total Brookhaven National Laboratory	**437**	**437**	**525**
Idaho National Laboratory			
Tritium & Domestic Uranium Enrichment	3,158	3,710	3,484
Tritium and Domestic Uranium Enrichment	3,158	3,710	3,484
Production Modernization	3,158	3,710	3,484
Safety and Environmental Operations	725	725	610
Operating	725	725	610
Infrastructure and Operations	725	725	610
Total Idaho National Laboratory	**3,883**	**4,435**	**4,094**
Kansas City National Security Complex (KCNSC)			
B61-12 LEP	146,696	146,696	0
W88 ALT 370	43,106	43,106	1,000
W80-4 LEP	187,889	187,889	280,385
W87-1 Modification Program	97,000	97,000	159,935
W93 Program	12,000	12,000	33,974
Stockpile Major Modernization	486,691	486,691	475,294
Stockpile Sustainment	155,954	155,954	170,982
Weapons Dismantlement and Disposition	350	350	200
Production Operations	126,419	126,419	175,915
Nuclear Enterprise Assurance	8,173	8,173	10,500
Stockpile Management	777,587	777,587	832,892
Enterprise Pit Production Support (formerly Enterprise Plutonium Support)	9,500	9,500	12,591
Plutonium Modernization	9,500	9,500	12,591
Primary Capability Modernization	9,500	9,500	12,591
Secondary Capability Modernization (SCM)	1,000	1,000	500
Secondary Capability Modernization	1,000	1,000	500
Non-Nuclear Capability Modernization	44,285	44,285	54,500
Total, Non-Nuclear Capability Modernization	44,285	44,285	54,500
Capability Based Investments	6,062	6,062	8,000
Production Modernization	60,847	60,847	75,591
Archiving and Support	316	342	450
Studies and Assessments	100	63	1,500

DEPARTMENT OF ENERGY
Funding by Site
TAS_0240 - Weapons Activities - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Aging and Lifetimes	4,852	3,929	2,358
Stockpile Responsiveness	4,638	4,542	5,599
Advanced Certification and Qualification	2,652	3,311	3,802
Engineering and Integrated Assessments	12,558	12,187	13,709
Weapon Technology Development	26,977	34,669	29,578
Weapons Technology and Manufacturing Maturation	26,977	34,669	29,578
Advanced Simulation and Computing	3,500	5,000	5,000
Advanced Simulation & Computing	3,500	5,000	5,000
Stockpile Research, Technology, and Engineering	43,035	51,856	48,287
Operations of Facilities	90,000	81,000	109,000
Safety and Environmental Operations	3,463	3,463	3,430
Maintenance and Repair of Facilities	22,000	22,000	38,000
Recapitalization (formerly Infrastructure and Safety)	65,460	42,629	53,817
Operating	180,923	149,092	204,247
Infrastructure and Operations	180,923	149,092	204,247
STA Operations and Equipment	51,216	51,216	48,588
Secure Transportation Asset	51,216	51,216	48,588
Operations and Maintenance - DNS	22,080	22,080	36,478
Defense Nuclear Security (DNS)	22,080	22,080	36,478
Information Technology and Cyber Security	17,821	25,569	18,471
Total Kansas City National Security Complex (KCNSC)	**1,153,509**	**1,138,247**	**1,264,554**
Lawrence Berkeley National Laboratory			
Information Technology and Cyber Security	0	2,000	2,658
Total Lawrence Berkeley National Laboratory	**0**	**2,000**	**2,658**
Lawrence Livermore National Laboratory			
W80-4 LEP	173,050	173,050	125,901
W87-1 Modification Program	151,000	151,000	245,495
W93 Program	2,957	2,957	2,000
Stockpile Major Modernization	327,007	327,007	373,396
Stockpile Sustainment	96,772	96,772	107,192
Weapons Dismantlement and Disposition	2,000	2,000	2,800
Production Operations	5,748	5,748	11,000
Nuclear Enterprise Assurance	5,634	5,634	10,000
Stockpile Management	437,161	437,161	504,388
Enterprise Pit Production Support (formerly Enterprise Plutonium Support)	56,260	56,260	82,851
Plutonium Modernization	56,260	56,260	82,851
High Explosives & Energetics	16,500	16,500	14,500
HE & Energetics	16,500	16,500	14,500
Primary Capability Modernization	72,760	72,760	97,351
Secondary Capability Modernization (SCM)	16,200	16,200	16,065
Secondary Capability Modernization	16,200	16,200	16,065
Tritium & Domestic Uranium Enrichment	0	100	0
Tritium and Domestic Uranium Enrichment	0	100	0
Non-Nuclear Capability Modernization	547	547	660
Total, Non-Nuclear Capability Modernization	547	547	660
Capability Based Investments	35,044	35,044	30,000
Production Modernization	124,551	124,651	144,076

DEPARTMENT OF ENERGY
Funding by Site
TAS_0240 - Weapons Activities - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Primary Assessment Technologies	52,411	50,113	60,643
Dynamic Materials Properties	44,764	45,348	43,677
Advanced Diagnostics	9,540	9,876	9,540
Secondary Assessment Technologies	33,811	33,073	24,500
Enhanced Capabilities for Subcritical Experiments	107,542	117,219	92,700
Hydrodynamic and Subcritical Experiment Execution Support	27,598	26,161	32,000
Assessment Science	275,666	281,790	263,060
Archiving and Support	13,215	11,398	10,450
Delivery Environments	27,407	25,872	26,932
Studies and Assessments	1,750	1,564	16,000
Aging and Lifetimes	17,300	19,794	12,915
Stockpile Responsiveness	16,036	15,822	17,402
Advanced Certification and Qualification	17,375	16,655	16,690
Engineering and Integrated Assessments	93,083	91,105	100,389
Inertial Confinement Fusion	380,000	384,050	419,765
Weapon Technology Development	34,777	37,993	65,243
Weapons Technology and Manufacturing Maturation	34,777	37,993	65,243
Advanced Simulation and Computing	196,066	210,162	221,563
Advanced Simulation & Computing	196,066	210,162	221,563
Stockpile Research, Technology, and Engineering	979,592	1,005,100	1,070,020
Operations of Facilities	82,000	80,000	100,000
Safety and Environmental Operations	37,444	37,444	35,170
Maintenance and Repair of Facilities	37,000	35,000	44,000
Recapitalization (formerly Infrastructure and Safety)	81,175	49,275	59,245
Operating	237,619	201,719	238,415
22-D-514 Digital Infrastructure Capability Expansion, LLNL	67,300	67,300	0
Mission Enabling Construction	67,300	67,300	0
I&O - Construction	67,300	67,300	0
Infrastructure and Operations	304,919	269,019	238,415
Operations and Maintenance - DNS	79,436	79,436	85,179
Defense Nuclear Security (DNS)	79,436	79,436	85,179
Information Technology and Cyber Security	47,196	71,310	84,589
Total Lawrence Livermore National Laboratory	**1,972,855**	**1,986,677**	**2,126,667**
Livermore Site Office			
Recapitalization (formerly Infrastructure and Safety)	17,850	0	14,130
Operating	17,850	0	14,130
Infrastructure and Operations	17,850	0	14,130
Information Technology and Cyber Security	0	0	351
Total Livermore Site Office	**17,850**	**0**	**14,481**
Los Alamos National Laboratory			
B61-12 LEP	37,009	37,009	0
W88 ALT 370	11,418	11,418	4,326
W80-4 LEP	57,572	57,572	88,218
W87-1 Modification Program	15,000	15,000	26,027
W93 Program	89,900	89,900	197,185
Stockpile Major Modernization	210,899	210,899	315,756
Stockpile Sustainment	268,753	268,753	288,983

DEPARTMENT OF ENERGY
Funding by Site
TAS_0240 - Weapons Activities - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Weapons Dismantlement and Disposition	2,000	2,000	2,800
Production Operations	48,457	48,457	73,205
Nuclear Enterprise Assurance	5,236	5,236	8,500
Stockpile Management	535,345	535,345	689,244
Los Alamos Pit Production (formerly Los Alamos Plutonium Operations)	750,871	750,871	954,382
21-D-512, Plutonium Pit Production Project, LANL	588,234	588,234	470,000
15-D-302, TA-55 Reinvestments Project, Phase 3, LANL	30,002	30,002	39,475
07-D-220-04, Transuranic Liquid Waste Facility, LANL	24,759	24,759	0
04-D-125, Chemistry and Metallurgy Research Replacement Project, LANL	133,123	133,123	0
Los Alamos Plutonium Modernization	1,526,989	1,526,989	1,463,857
Plutonium Modernization	1,526,989	1,526,989	1,463,857
High Explosives & Energetics	15,000	15,000	15,500
23-D-516 Energetic Materials Characterization Facility, LANL	19,000	19,000	0
HE & Energetics	34,000	34,000	15,500
Primary Capability Modernization	1,560,989	1,560,989	1,479,357
Secondary Capability Modernization (SCM)	25,939	25,939	49,043
Secondary Capability Modernization	25,939	25,939	49,043
Tritium & Domestic Uranium Enrichment	2,041	2,000	2,141
Tritium and Domestic Uranium Enrichment	2,041	2,000	2,141
Non-Nuclear Capability Modernization	945	945	1,150
Total, Non-Nuclear Capability Modernization	945	945	1,150
Capability Based Investments	11,700	11,700	19,000
Production Modernization	1,601,614	1,601,573	1,550,691
Primary Assessment Technologies	84,893	87,386	105,188
Dynamic Materials Properties	36,760	38,422	42,453
Advanced Diagnostics	5,600	5,240	5,700
Secondary Assessment Technologies	28,003	27,583	24,547
Enhanced Capabilities for Subcritical Experiments	75,600	81,710	90,627
Hydrodynamic and Subcritical Experiment Execution Support	62,876	63,055	76,000
Assessment Science	293,732	303,396	344,515
Archiving and Support	17,004	17,598	17,736
Delivery Environments	24,500	25,872	24,906
Studies and Assessments	250	1,251	12,250
Aging and Lifetimes	22,288	23,754	16,400
Stockpile Responsiveness	18,750	15,822	18,346
Advanced Certification and Qualification	20,578	19,799	18,355
Engineering and Integrated Assessments	103,370	104,096	107,993
Inertial Confinement Fusion	25,000	24,641	24,894
Weapon Technology Development	67,618	57,769	65,925
Weapons Technology and Manufacturing Maturation	67,618	57,769	65,925
Advanced Simulation and Computing	187,675	194,016	208,619
Advanced Simulation & Computing	187,675	194,016	208,619
Stockpile Research, Technology, and Engineering	677,395	683,918	751,946
Operations of Facilities	320,000	325,000	455,000
Safety and Environmental Operations	23,215	23,215	19,946
Maintenance and Repair of Facilities	145,000	151,000	212,000
Recapitalization (formerly Infrastructure and Safety)	91,354	47,597	39,780
Operating	579,569	546,812	726,726
25-D-510 Plutonium Mission Safety & Quality Building, LANL	0	0	48,500
23-D-518 Plutonium Modernization Operations & Waste Management Office Bldg, LANL	48,500	48,500	0

DEPARTMENT OF ENERGY
Funding by Site
TAS_0240 - Weapons Activities - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
23-D-517 Electrical Power Capacity Upgrade, LANL	24,000	24,000	70,000
Mission Enabling Construction	72,500	72,500	118,500
I&O - Construction	72,500	72,500	118,500
Infrastructure and Operations	652,069	619,312	845,226
Operations and Maintenance - DNS	134,945	134,945	155,305
Defense Nuclear Security (DNS)	134,945	134,945	155,305
Information Technology and Cyber Security	25,183	28,054	35,946
Total Los Alamos National Laboratory	**3,626,551**	**3,603,147**	**4,028,358**
Los Alamos Site Office			
Information Technology and Cyber Security	32	27	25
Total Los Alamos Site Office	**32**	**27**	**25**
National Energy Technology Lab			
Enterprise Pit Production Support (formerly Enterprise Plutonium Support)	5,500	5,500	5,500
Plutonium Modernization	5,500	5,500	5,500
Primary Capability Modernization	5,500	5,500	5,500
Tritium & Domestic Uranium Enrichment	4,159	3,630	3,597
Tritium and Domestic Uranium Enrichment	4,159	3,630	3,597
Non-Nuclear Capability Modernization	6,028	6,028	5,930
Total, Non-Nuclear Capability Modernization	6,028	6,028	5,930
Capability Based Investments	1,135	1,135	0
Production Modernization	16,822	16,293	15,027
Hydrodynamic and Subcritical Experiment Execution Support	0	196	0
Assessment Science	0	196	0
Archiving and Support	350	350	346
Delivery Environments	1,035	936	1,022
Studies and Assessments	0	40	646
Aging and Lifetimes	350	285	346
Stockpile Responsiveness	412	305	408
Advanced Certification and Qualification	412	328	408
Engineering and Integrated Assessments	2,559	2,244	3,176
Weapon Technology Development	2,090	2,255	2,303
Weapons Technology and Manufacturing Maturation	2,090	2,255	2,303
Stockpile Research, Technology, and Engineering	4,649	4,695	5,479
Safety and Environmental Operations	330	330	0
Operating	330	330	0
Infrastructure and Operations	330	330	0
Total National Energy Technology Lab	**21,801**	**21,318**	**20,506**
Naval Research Laboratory			
Dynamic Materials Properties	300	600	0
Advanced Diagnostics	1,600	1,471	1,600
Secondary Assessment Technologies	2,500	2,407	0
Enhanced Capabilities for Subcritical Experiments	400	400	0
Assessment Science	4,800	4,878	1,600
Inertial Confinement Fusion	4,500	2,000	0
Stockpile Research, Technology, and Engineering	9,300	6,878	1,600

DEPARTMENT OF ENERGY
Funding by Site
TAS_0240 - Weapons Activities - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Total Naval Research Laboratory	**9,300**	**6,878**	**1,600**
Nevada Field Office			
Information Technology and Cyber Security	949	1,452	1,532
Total Nevada Field Office	**949**	**1,452**	**1,532**
Nevada National Security Site			
Enterprise Pit Production Support (formerly Enterprise Plutonium Support)	11,087	11,087	12,385
Plutonium Modernization	11,087	11,087	12,385
High Explosives & Energetics	2,000	2,000	2,280
HE & Energetics	2,000	2,000	2,280
Primary Capability Modernization	13,087	13,087	14,665
Tritium & Domestic Uranium Enrichment	0	163	136
Tritium and Domestic Uranium Enrichment	0	163	136
Non-Nuclear Capability Modernization	50	50	117
Total, Non-Nuclear Capability Modernization	50	50	117
Capability Based Investments	17,300	17,300	15,000
Production Modernization	30,437	30,600	29,918
Primary Assessment Technologies	900	1,443	1,500
Dynamic Materials Properties	7,704	10,000	10,965
Advanced Diagnostics	6,124	5,791	6,124
Enhanced Capabilities for Subcritical Experiments	55,155	35,146	42,430
Hydrodynamic and Subcritical Experiment Execution Support	47,848	50,253	64,500
17-D-640, U1a Complex Enhancements Project, NNSS	48,130	48,130	69,583
Assessment Science	165,861	150,763	195,102
Archiving and Support	3,389	2,943	3,300
Advanced Certification and Qualification	3,841	3,144	3,015
Engineering and Integrated Assessments	7,230	6,087	6,315
Inertial Confinement Fusion	4,661	4,000	4,000
Weapon Technology Development	1,220	1,023	1,455
Weapons Technology and Manufacturing Maturation	1,220	1,023	1,455
Stockpile Research, Technology, and Engineering	178,972	161,873	206,872
Operations of Facilities	105,000	100,000	117,000
Safety and Environmental Operations	6,504	6,504	6,328
Maintenance and Repair of Facilities	70,000	75,000	100,000
Recapitalization (formerly Infrastructure and Safety)	33,850	44,445	45,675
Operating	215,354	225,949	269,003
25-D-511 PULSE New Access, NNSS	0	0	25,000
Mission Enabling Construction	0	0	25,000
I&O - Construction	0	0	25,000
Infrastructure and Operations	215,354	225,949	294,003
Program Direction - STA - Federal Support	260	260	354
Secure Transportation Asset	260	260	354
Operations and Maintenance - DNS	91,130	91,130	127,355
Defense Nuclear Security (DNS)	91,130	91,130	127,355
Information Technology and Cyber Security	44,195	42,165	57,318
Total Nevada National Security Site	**560,348**	**551,977**	**715,820**

DEPARTMENT OF ENERGY
Funding by Site
TAS_0240 - Weapons Activities - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
NNSA Albuquerque Complex			
B61-12 LEP	323,481	323,481	27,087
W88 ALT 370	46,503	46,503	10,673
W80-4 LEP	114,451	114,451	67,940
W87-1 Modification Program	23,327	23,327	24,050
W93 Program	73,792	73,792	71,809
Stockpile Major Modernization	581,554	581,554	201,559
Stockpile Sustainment	139,799	139,799	42,722
Weapons Dismantlement and Disposition	5,666	5,666	0
Production Operations	22,379	22,379	7,100
Nuclear Enterprise Assurance	13,114	13,114	16,502
Stockpile Management	762,512	762,512	267,883
Los Alamos Pit Production (formerly Los Alamos Plutonium Operations)	6,565	6,565	16,210
Los Alamos Plutonium Modernization	6,565	6,565	16,210
Enterprise Pit Production Support (formerly Enterprise Plutonium Support)	5,489	5,489	6,501
Plutonium Modernization	12,054	12,054	22,711
Primary Capability Modernization	12,054	12,054	22,711
Tritium & Domestic Uranium Enrichment	144,518	157,444	124,198
Tritium and Domestic Uranium Enrichment	144,518	157,444	124,198
Non-Nuclear Capability Modernization	237	237	0
Total, Non-Nuclear Capability Modernization	237	237	0
Capability Based Investments	2,876	2,876	0
Production Modernization	159,685	172,611	146,909
Dynamic Materials Properties	6,500	6,500	6,500
Assessment Science	6,500	6,500	6,500
Archiving and Support	412	1,194	2,000
Delivery Environments	4,263	7,631	6,690
Studies and Assessments	985	381	1,035
Aging and Lifetimes	8,039	3,793	5,192
Stockpile Responsiveness	2,877	907	1,180
Advanced Certification and Qualification	2,321	4,672	6,628
Engineering and Integrated Assessments	18,897	18,578	22,725
Inertial Confinement Fusion	35,000	33,000	33,000
Weapon Technology Development	9,238	15,266	12,999
Weapons Technology and Manufacturing Maturation	9,238	15,266	12,999
Stockpile Research, Technology, and Engineering	69,635	73,344	75,224
Academic Programs and Community Support	111,912	111,912	128,188
Safety and Environmental Operations	0	0	400
Operating	0	0	400
Infrastructure and Operations	0	0	400
STA Operations and Equipment	78,423	78,423	92,156
Secure Transportation Asset	78,423	78,423	92,156
Operations and Maintenance - DNS	11,777	11,777	12,062
Defense Nuclear Security (DNS)	11,777	11,777	12,062
Legacy Contractor Pensions and Settlement Payments (WA)	114,632	114,632	30,634
Total NNSA Albuquerque Complex	**1,308,576**	**1,325,211**	**753,456**
Oak Ridge National Laboratory			
Tritium & Domestic Uranium Enrichment	87,096	68,879	120,000

DEPARTMENT OF ENERGY
Funding by Site
TAS_0240 - Weapons Activities - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Tritium and Domestic Uranium Enrichment	87,096	68,879	120,000
Non-Nuclear Capability Modernization	600	600	0
Total, Non-Nuclear Capability Modernization	600	600	0
Capability Based Investments	601	601	0
Production Modernization	88,297	70,080	120,000
Aging and Lifetimes	200	0	0
Engineering and Integrated Assessments	200	0	0
Advanced Simulation and Computing	831	1,181	831
Advanced Simulation & Computing	831	1,181	831
Stockpile Research, Technology, and Engineering	1,031	1,181	831
Safety and Environmental Operations	12,261	12,261	10,650
Operating	12,261	12,261	10,650
Infrastructure and Operations	12,261	12,261	10,650
Total Oak Ridge National Laboratory	**101,589**	**83,522**	**131,481**
Oak Ridge Office			
Safety and Environmental Operations	275	275	0
Operating	275	275	0
Infrastructure and Operations	275	275	0
Total Oak Ridge Office	**275**	**275**	**0**
Office of Scientific & Technical Information			
Primary Assessment Technologies	220	212	220
Assessment Science	220	212	220
Stockpile Research, Technology, and Engineering	220	212	220
Information Technology and Cyber Security	305	444	449
Total Office of Scientific & Technical Information	**525**	**656**	**669**
Pacific Northwest National Laboratory			
Secondary Capability Modernization (SCM)	4,885	4,885	4,520
Secondary Capability Modernization	4,885	4,885	4,520
Tritium & Domestic Uranium Enrichment	97,293	63,514	86,157
Tritium and Domestic Uranium Enrichment	97,293	63,514	86,157
Non-Nuclear Capability Modernization	480	480	860
Total, Non-Nuclear Capability Modernization	480	480	860
Capability Based Investments	4,885	4,885	3,000
Production Modernization	107,543	73,764	94,537
Aging and Lifetimes	400	1,310	0
Engineering and Integrated Assessments	400	1,310	0
Weapon Technology Development	1,350	1,234	2,638
Weapons Technology and Manufacturing Maturation	1,350	1,234	2,638
Stockpile Research, Technology, and Engineering	1,750	2,544	2,638
Safety and Environmental Operations	3,817	3,817	3,329
Operating	3,817	3,817	3,329
Infrastructure and Operations	3,817	3,817	3,329
STA Operations and Equipment	2,000	2,000	2,000
Secure Transportation Asset	2,000	2,000	2,000
Information Technology and Cyber Security	2,550	2,250	2,575

DEPARTMENT OF ENERGY
Funding by Site
TAS_0240 - Weapons Activities - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Total Pacific Northwest National Laboratory	**117,660**	**84,375**	**105,079**
Pantex Plant			
B61-12 LEP	65,805	65,805	0
W88 ALT 370	46,404	46,404	50,600
W80-4 LEP	64,050	64,050	89,217
W87-1 Modification Program	18,000	18,000	44,453
W93 Program	2,000	2,000	2,520
Stockpile Major Modernization	196,259	196,259	186,790
Stockpile Sustainment	106,014	106,014	145,758
Weapons Dismantlement and Disposition	12,537	12,537	28,000
Production Operations	122,023	122,023	151,140
Nuclear Enterprise Assurance	3,010	3,010	3,500
Stockpile Management	439,843	439,843	515,188
Enterprise Pit Production Support (formerly Enterprise Plutonium Support)	0	0	385
Plutonium Modernization	0	0	385
High Explosives & Energetics	18,500	18,500	16,550
21-D-510 HE Synthesis Formulation and Production, PX	108,000	108,000	0
15-D-301, HE Science & Engineering Facility, PX	20,000	20,000	15,000
HE & Energetics	146,500	146,500	31,550
Primary Capability Modernization	146,500	146,500	31,935
Non-Nuclear Capability Modernization	79	79	68
Total, Non-Nuclear Capability Modernization	79	79	68
Capability Based Investments	18,505	18,505	10,000
Warhead Assembly Modernization	0	0	34,000
Total, Warhead Assembly	0	0	34,000
Production Modernization	165,084	165,084	76,003
Studies and Assessments	100	31	2,500
Aging and Lifetimes	3,089	3,435	2,300
Stockpile Responsiveness	3,600	5,627	4,320
Advanced Certification and Qualification	1,281	1,081	500
Engineering and Integrated Assessments	8,070	10,174	9,620
Weapon Technology Development	2,944	3,092	3,852
Weapons Technology and Manufacturing Maturation	2,944	3,092	3,852
Advanced Simulation and Computing	0	750	750
Advanced Simulation & Computing	0	750	750
Stockpile Research, Technology, and Engineering	11,014	14,016	14,222
Operations of Facilities	83,000	80,000	90,000
Safety and Environmental Operations	24,386	24,386	26,736
Maintenance and Repair of Facilities	108,000	102,000	120,000
Recapitalization (formerly Infrastructure and Safety)	41,989	26,044	74,165
Operating	257,375	232,430	310,901
Infrastructure and Operations	257,375	232,430	310,901
STA Operations and Equipment	8,302	8,302	8,655
Secure Transportation Asset	8,302	8,302	8,655
Operations and Maintenance - DNS	155,621	155,621	173,515
Defense Nuclear Security (DNS)	155,621	155,621	173,515
Information Technology and Cyber Security	12,948	10,134	14,899
Total Pantex Plant	**1,050,187**	**1,025,430**	**1,113,383**

DEPARTMENT OF ENERGY
Funding by Site
TAS_0240 - Weapons Activities - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Portsmouth Gaseous Diffusion Plant			
Secondary Capability Modernization (SCM)	30,000	30,000	15,000
Secondary Capability Modernization	30,000	30,000	15,000
Tritium & Domestic Uranium Enrichment	30,000	30,400	31,100
Tritium and Domestic Uranium Enrichment	30,000	30,400	31,100
Production Modernization	60,000	60,400	46,100
Total Portsmouth Gaseous Diffusion Plant	**60,000**	**60,400**	**46,100**
Sandia National Laboratories			
B61-12 LEP	56,528	56,528	0
W88 ALT 370	12,145	12,145	10,099
W80-4 LEP	489,539	489,539	443,381
W87-1 Modification Program	307,500	307,500	423,873
W93 Program	54,865	54,865	105,908
Stockpile Major Modernization	920,577	920,577	983,261
Stockpile Sustainment	385,089	385,089	446,423
Weapons Dismantlement and Disposition	2,450	2,450	2,000
Production Operations	171,934	171,934	224,934
Nuclear Enterprise Assurance	6,257	6,257	14,000
Stockpile Management	1,486,307	1,486,307	1,670,618
High Explosives & Energetics	15,000	15,000	15,700
HE & Energetics	15,000	15,000	15,700
Primary Capability Modernization	15,000	15,000	15,700
Tritium & Domestic Uranium Enrichment	1,042	724	687
Tritium and Domestic Uranium Enrichment	1,042	724	687
Non-Nuclear Capability Modernization	64,017	64,017	63,796
22-D-513, Power Sources Capability, SNL	0	0	50,000
Total, Non-Nuclear Capability Modernization	64,017	64,017	113,796
Capability Based Investments	25,900	25,900	29,000
Production Modernization	105,959	105,641	159,183
Primary Assessment Technologies	11,000	10,100	9,200
Dynamic Materials Properties	15,536	15,776	16,645
Advanced Diagnostics	8,200	8,686	8,536
Secondary Assessment Technologies	6,250	6,788	5,500
Enhanced Capabilities for Subcritical Experiments	27,801	39,588	8,724
Assessment Science	68,787	80,938	48,605
Archiving and Support	8,750	9,221	4,300
Delivery Environments	71,866	68,701	58,895
Studies and Assessments	1,750	1,564	22,000
Aging and Lifetimes	19,200	22,380	15,400
Stockpile Responsiveness	13,000	15,822	17,346
Advanced Certification and Qualification	7,819	7,161	7,418
Engineering and Integrated Assessments	122,385	124,849	125,359
Inertial Confinement Fusion	82,600	84,114	93,459
Weapon Technology Development	122,565	114,866	83,214
Weapons Technology and Manufacturing Maturation	122,565	114,866	83,214
Advanced Simulation and Computing	169,027	184,786	198,070
Advanced Simulation & Computing	169,027	184,786	198,070
Stockpile Research, Technology, and Engineering	565,364	589,553	548,707

DEPARTMENT OF ENERGY
Funding by Site
TAS_0240 - Weapons Activities - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Operations of Facilities	106,000	95,000	113,000
Safety and Environmental Operations	11,240	11,240	10,657
Maintenance and Repair of Facilities	24,000	20,000	30,000
Recapitalization (formerly Infrastructure and Safety)	45,179	23,550	72,560
Operating	186,419	149,790	226,217
Infrastructure and Operations	186,419	149,790	226,217
STA Operations and Equipment	74,426	74,426	84,761
Secure Transportation Asset	74,426	74,426	84,761
Operations and Maintenance - DNS	74,097	74,097	84,729
Defense Nuclear Security (DNS)	74,097	74,097	84,729
Information Technology and Cyber Security	51,056	49,919	59,707
Total Sandia National Laboratories	**2,543,628**	**2,529,733**	**2,833,922**
Sandia Site Office			
Information Technology and Cyber Security	35	29	312
Total Sandia Site Office	**35**	**29**	**312**
Savannah River National Laboratory			
Savannah River Pit Production (formerly Savannah River Plutonium Operations)	56,442	56,442	73,158
Savannah River Plutonium Modernization	56,442	56,442	73,158
Plutonium Modernization	56,442	56,442	73,158
Primary Capability Modernization	56,442	56,442	73,158
Tritium & Domestic Uranium Enrichment	9,115	6,298	13,515
Tritium and Domestic Uranium Enrichment	9,115	6,298	13,515
Non-Nuclear Capability Modernization	84	84	115
Total, Non-Nuclear Capability Modernization	84	84	115
Capability Based Investments	0	0	4,998
Production Modernization	65,641	62,824	91,786
Archiving and Support	0	245	250
Engineering and Integrated Assessments	0	245	250
Stockpile Research, Technology, and Engineering	0	245	250
Safety and Environmental Operations	15,619	15,619	8,131
Operating	15,619	15,619	8,131
Infrastructure and Operations	15,619	15,619	8,131
Information Technology and Cyber Security	6,159	2,299	2,347
Total Savannah River National Laboratory	**87,419**	**80,987**	**102,514**
Savannah River Operations Office			
Savannah River Pit Production (formerly Savannah River Plutonium Operations)	1,100	1,100	1,044
Savannah River Plutonium Modernization	1,100	1,100	1,044
Plutonium Modernization	1,100	1,100	1,044
Primary Capability Modernization	1,100	1,100	1,044
Production Modernization	1,100	1,100	1,044
Recapitalization (formerly Infrastructure and Safety)	0	12,150	0
Operating	0	12,150	0
Infrastructure and Operations	0	12,150	0

DEPARTMENT OF ENERGY
Funding by Site
TAS_0240 - Weapons Activities - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Information Technology and Cyber Security	447	756	400
Total Savannah River Operations Office	**1,547**	**14,006**	**1,444**
Savannah River Site			
B61-12 LEP	14,500	14,500	0
W80-4 LEP	2,240	2,240	4,149
W87-1 Modification Program	3,300	3,300	3,595
W93 Program	1,183	1,183	1,707
Stockpile Major Modernization	21,223	21,223	9,451
Stockpile Sustainment	45,614	45,614	64,162
Weapons Dismantlement and Disposition	600	600	500
Production Operations	25,783	25,783	34,081
Nuclear Enterprise Assurance	3,977	3,977	4,000
Stockpile Management	97,197	97,197	112,194
21-D-511, Savannah River Plutonium Processing Facility, SRS	1,200,000	1,200,000	1,200,000
Savannah River Plutonium Modernization	1,200,000	1,200,000	1,200,000
Plutonium Modernization	1,200,000	1,200,000	1,200,000
Primary Capability Modernization	1,200,000	1,200,000	1,200,000
Tritium & Domestic Uranium Enrichment	92,087	122,300	141,003
18-D-650 Tritium Finishing Facility, SRS	73,300	73,300	0
Tritium and Domestic Uranium Enrichment	165,387	195,600	141,003
Capability Based Investments	9,420	9,420	5,000
Production Modernization	1,374,807	1,405,020	1,346,003
Enhanced Capabilities for Subcritical Experiments	1,375	725	725
Assessment Science	1,375	725	725
Aging and Lifetimes	5,514	3,706	2,550
Engineering and Integrated Assessments	5,514	3,706	2,550
Weapon Technology Development	7,906	7,916	7,661
Weapons Technology and Manufacturing Maturation	7,906	7,916	7,661
Advanced Simulation and Computing	500	500	500
Advanced Simulation & Computing	500	500	500
Stockpile Research, Technology, and Engineering	15,295	12,847	11,436
Operations of Facilities	95,000	90,000	179,000
Safety and Environmental Operations	28	28	0
Maintenance and Repair of Facilities	40,000	36,000	77,000
Recapitalization (formerly Infrastructure and Safety)	7,558	2,200	26,410
Operating	142,586	128,228	282,410
Infrastructure and Operations	142,586	128,228	282,410
Operations and Maintenance - DNS	9,088	9,088	122,818
Defense Nuclear Security (DNS)	9,088	9,088	122,818
Information Technology and Cyber Security	6,274	7,770	15,296
Total Savannah River Site	**1,645,247**	**1,660,150**	**1,890,157**
SLAC National Accelerator Laboratory			
Dynamic Materials Properties	1,500	0	8,500
Assessment Science	1,500	0	8,500
Inertial Confinement Fusion	180	180	180
Stockpile Research, Technology, and Engineering	1,680	180	8,680
Total SLAC National Accelerator Laboratory	**1,680**	**180**	**8,680**

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
University of Rochester			
Inertial Confinement Fusion	86,100	86,641	92,648
Stockpile Research, Technology, and Engineering	86,100	86,641	92,648
Total University of Rochester	**86,100**	**86,641**	**92,648**
Washington Headquarters			
B61-12 LEP	0	0	413
B61-13 LEP	0	0	240
W88 ALT 370	2	2	1,584
W80-4 LEP	0	0	9,566
W80-4 ALT-SLCM	20,000	20,000	0
W87-1 Modification Program	0	0	23,634
W93 Program	0	0	13,673
Stockpile Major Modernization	20,002	20,002	49,110
Stockpile Sustainment	81,284	81,284	48,772
Weapons Dismantlement and Disposition	23,034	23,034	1,800
Production Operations	1,000	1,000	14,360
Nuclear Enterprise Assurance	750	750	4,500
Stockpile Management	126,070	126,070	118,542
Los Alamos Pit Production (formerly Los Alamos Plutonium Operations)	9,976	9,976	14,019
04-D-125, Chemistry and Metallurgy Research Replacement Project, LANL	5,000	5,000	0
Los Alamos Plutonium Modernization	14,976	14,976	14,019
Savannah River Pit Production (formerly Savannah River Plutonium Operations)	758	758	1,130
Savannah River Plutonium Modernization	758	758	1,130
Enterprise Pit Production Support (formerly Enterprise Plutonium Support)	1,157	1,157	1,751
Plutonium Modernization	16,891	16,891	16,900
High Explosives & Energetics	34,380	34,380	51,145
HE & Energetics	34,380	34,380	51,145
Primary Capability Modernization	51,271	51,271	68,045
Secondary Capability Modernization (SCM)	64,370	64,370	116,597
Secondary Capability Modernization	64,370	64,370	116,597
Tritium & Domestic Uranium Enrichment	31,140	32,764	120,715
Tritium and Domestic Uranium Enrichment	31,140	32,764	120,715
Non-Nuclear Capability Modernization	5,484	5,484	13,781
Total, Non-Nuclear Capability Modernization	5,484	5,484	13,781
Capability Based Investments	5,492	5,492	13,246
Production Modernization	157,757	159,381	332,384
Primary Assessment Technologies	5,083	5,253	6,965
Dynamic Materials Properties	3,927	2,786	6,035
Secondary Assessment Technologies	1,540	2,253	2,034
Enhanced Capabilities for Subcritical Experiments	9,352	2,437	5,092
Hydrodynamic and Subcritical Experiment Execution Support	4,080	2,737	9,673
17-D-640, U1a Complex Enhancements Project, NNSS	5,000	5,000	3,500
Assessment Science	28,982	20,466	33,299
Archiving and Support	514	659	595
Delivery Environments	1,906	1,965	1,804
Studies and Assessments	65	75	11,069
Aging and Lifetimes	1,038	1,308	901

DEPARTMENT OF ENERGY
Funding by Site
TAS_0240 - Weapons Activities - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Stockpile Responsiveness	829	955	1,049
Advanced Certification and Qualification	544	872	884
Engineering and Integrated Assessments	4,896	5,834	16,302
Inertial Confinement Fusion	11,959	11,374	14,884
Weapon Technology Development	3,649	4,293	3,706
Weapons Technology and Manufacturing Maturation	3,649	4,293	3,706
Advanced Simulation and Computing	231,401	191,855	242,417
Advanced Simulation & Computing	231,401	191,855	242,417
Stockpile Research, Technology, and Engineering	280,887	233,822	310,608
Operations of Facilities	53,000	85,000	24,000
Safety and Environmental Operations	2,331	2,331	42,797
Maintenance and Repair of Facilities	86,617	95,617	128,000
Recapitalization (formerly Infrastructure and Safety)	150,556	251,635	306,846
Operating	292,504	434,583	501,643
Infrastructure and Operations	292,504	434,583	501,643
Program Direction - STA - Federal Support	129,810	129,810	134,910
Secure Transportation Asset	129,810	129,810	134,910
Operations and Maintenance - DNS	92,310	92,310	107,854
Defense Nuclear Security (DNS)	92,310	92,310	107,854
Information Technology and Cyber Security	217,556	191,342	329,257
Total Washington Headquarters	**1,296,894**	**1,367,318**	**1,835,198**
Y-12 National Security Complex			
B61-12 LEP	28,000	28,000	0
B61-13 LEP	0	0	15,760
W88 ALT 370	2,479	2,479	418
W80-4 LEP	33,660	33,660	55,993
W87-1 Modification Program	65,000	65,000	144,970
W93 Program	3,812	3,812	27,000
Stockpile Major Modernization	132,951	132,951	244,141
Stockpile Sustainment	41,860	41,860	41,266
Weapons Dismantlement and Disposition	7,363	7,363	16,000
Production Operations	107,151	107,151	124,832
Nuclear Enterprise Assurance	2,760	2,760	3,500
Stockpile Management	292,085	292,085	429,739
18-D-690, Lithium Processing Facility, Y-12	216,886	216,886	260,000
06-D-141, Uranium Processing Facility, Y-12	362,000	362,000	800,000
Secondary Capability Modernization (SCM)	393,969	393,969	553,628
Secondary Capability Modernization	972,855	972,855	1,613,628
Tritium & Domestic Uranium Enrichment	5,000	14,723	15,005
Tritium and Domestic Uranium Enrichment	5,000	14,723	15,005
Non-Nuclear Capability Modernization	248	248	323
Total, Non-Nuclear Capability Modernization	248	248	323
Capability Based Investments	15,300	15,300	16,000
Production Modernization	993,403	1,003,126	1,644,956
Archiving and Support	0	0	252
Studies and Assessments	0	31	2,000
Aging and Lifetimes	4,990	3,566	1,710
Stockpile Responsiveness	3,600	3,940	4,350
Advanced Certification and Qualification	1,281	1,081	1,300

DEPARTMENT OF ENERGY
Funding by Site
TAS_0240 - Weapons Activities - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Engineering and Integrated Assessments	9,871	8,618	9,612
Weapon Technology Development	5,831	5,789	7,915
Weapons Technology and Manufacturing Maturation	5,831	5,789	7,915
Advanced Simulation and Computing	1,000	1,750	1,750
Advanced Simulation & Computing	1,000	1,750	1,750
Stockpile Research, Technology, and Engineering	16,702	16,157	19,277
Operations of Facilities	104,000	102,000	118,000
Safety and Environmental Operations	19,895	19,895	23,249
Maintenance and Repair of Facilities	119,000	115,000	132,000
Recapitalization (formerly Infrastructure and Safety)	26,692	62,138	85,780
Operating	269,587	299,033	359,029
23-D-519, Special Material Facility, Y-12	49,500	49,500	0
Mission Enabling Construction	49,500	49,500	0
I&O - Construction	49,500	49,500	0
Infrastructure and Operations	319,087	348,533	359,029
Operations and Maintenance - DNS	197,688	197,688	220,705
17-D-710, West End Protected Area Reduction Project, Y-12	3,928	3,928	54,000
Construction - Defense Nuclear Security	3,928	3,928	54,000
Defense Nuclear Security (DNS)	201,616	201,616	274,705
Information Technology and Cyber Security	12,948	10,134	19,868
Total Y-12 National Security Complex	**1,835,841**	**1,871,651**	**2,747,574**
Total Funding by Site for TAS_0240 - Weapons Activities	**17,512,123**	**17,512,123**	**19,848,644**

Defense Nuclear Nonproliferation

Defense Nuclear Nonproliferation

Defense Nuclear Nonproliferation ($K)

	FY 2023 Enacted[a]	FY 2024 Annualized CR	FY 2025 Request	FY 2025 vs FY 2023	
				$	%
Defense Nuclear Nonproliferation Appropriation	**2,490,000**	**2,490,000**	**2,465,108**	**-24,892**	**-1.0%**

Proposed Appropriation Language

For Department of Energy (DOE) expenses, including the purchase, construction, and acquisition of plant and capital equipment and other incidental expenses necessary for Defense Nuclear Nonproliferation activities, in carrying out the purposes of the DOE Organization Act (42 U.S.C. 7101 et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion $2,465,108,000 to remain available until expended.

[a] FY 2023 Enacted excludes Ukraine Supplemental Appropriations totaling $161.3 million.

Defense Nuclear Nonproliferation

Overview

The DOE/National Nuclear Security Administration's (DOE/NNSA) nonproliferation, counterproliferation, and counterterrorism activities are critical to implementing the President's *National Security Strategic Guidance* and the 2022 Nuclear Posture Review by demonstrating renewed American nonproliferation leadership. DOE/NNSA's programs help reduce the dangers posed by nuclear weapons by extending the U.S. defenses against nuclear threats far beyond its borders. These programs help prevent adversaries from acquiring nuclear weapons or weapons-usable materials, technology, and expertise; counter adversary efforts to acquire such weapons or materials; and respond to nuclear or radiological incidents and accidents domestically and abroad. DOE/NNSA shares knowledge, accrued through its long experience in managing special nuclear materials, with partners around the world to achieve its international nonproliferation and nuclear security goals. DOE/NNSA leverages the unique technical and scientific expertise that underpins the Stockpile Stewardship Program for a range of nonproliferation and counterterrorism missions, from assessing foreign weapons programs and potential terrorist devices to managing the proliferation risks posed by civil nuclear applications.

The Defense Nuclear Nonproliferation (DNN) appropriation funds six programs in the FY 2025 Budget Request to reduce the threats of weapons of mass destruction (WMD). These programs: provide policy and technical leadership to prevent or limit the spread of WMD-related materials, technology, and expertise; develop technologies to detect nuclear proliferation; verify international agreements and arrangements; secure or eliminate inventories of nuclear weapons-related materials and infrastructure; ensure nuclear emergency support team (NEST) personnel are trained and equipped to respond to all manner of nuclear and radiological incidents worldwide, including the ability to perform advanced nuclear forensics assessments; and apply a comprehensive and integrated approach to emergency management and continuity of operations to safeguard health and safety, protect the environment, and enhance the resilience of the Department and the Nation.

DOE/NNSA advances the security and safety of the United States through three enduring mission pillars: maintaining a safe, secure, and effective nuclear weapons stockpile; reducing the threat of nuclear proliferation and nuclear terrorism; and providing naval nuclear propulsion. As such, the DNN appropriation programs' mission is complementary to the missions of the Office of Defense Programs (DP) and the Office of Naval Reactors (NR). Together, they form the basis for providing a strong nuclear defense strategy. These activities are carried out within a dynamic global security environment, as described in DOE/NNSA's annual reports, the *Prevent, Counter, and Respond – A Strategic Plan to Reduce Global Nuclear Threats* and the *Stockpile Stewardship Management Plan.*

This global threat landscape is characterized by Russia's unprovoked further invasion of Ukraine; states with existing nuclear weapons capabilities, such as Russia and China, that continue to selectively expand and diversify their arsenals; destabilizing proliferation activities by states with emerging or latent capabilities, including Iran and the Democratic People's Republic of Korea (DPRK); and the risk of hostile non-state actors gaining access to nuclear or radioactive material that can be used for malicious purposes. There also is an increased risk stemming from the availability of nuclear and radioactive materials because of the global expansion of commercial nuclear power and possible spread of fuel cycle technology, increased opportunities for illicit nuclear material trafficking and sophisticated procurement networks, and technology advances (including cyber-related tools) that may shorten nuclear weapon development timelines and complicate nuclear safeguards and security missions. Additionally, the rapid development and global dispersion of emerging technologies could improve U.S. capabilities to detect and respond to proliferation or, alternatively, could be used by adversaries to lower the barriers to proliferation or enable new proliferation pathways.

The DNN appropriation programs – comprised of the Office of DNN, the Office of Counterterrorism and Counterproliferation (CTCP), and the Office of Emergency Management (EM) – execute their missions in partnership with other U.S. Government agencies, most notably the Departments of State, Defense, Commerce, Justice, and Homeland Security; the Intelligence Community; and the Nuclear Regulatory Commission (NRC). Internationally, the programs have a strong and long-established partnership with the International Atomic Energy Agency (IAEA). DOE/NNSA has active program coordination mechanisms through the Global Partnership against the Spread of Weapons and Materials of Mass Destruction, the World Customs Organization (WCO), UNSCR 1540 Committee, International Criminal Police Organization (INTERPOL), and the IAEA-hosted International Conference on Nuclear Security (ICONS).

In carrying out WMD threat reduction activities, the DNN appropriation programs depend on the scientific and technical expertise of the Department and the U.S. national laboratories, as well as the capacity for international outreach, engagement, project management, implementation, and policy expertise. DNN also relies on competencies of other elements of DOE/NNSA, such as NNSA DP; and DOE, particularly the Office of Nuclear Energy (DOE-NE), the Office of Environmental Management (DOE-EM), and the Office of Science (DOE-SC).

The major elements of the DNN appropriation account include the following:

Material Management and Minimization (M3)
M3 programs reduce and, when possible, eliminate weapons-usable nuclear material around the world to achieve permanent threat reduction. The FY 2025 Budget Request supports the conversion or shutdown of research reactors and isotope production facilities that use highly enriched uranium (HEU), the qualification of new low-enriched uranium (LEU) fuels, the support of non-HEU-based molybdenum-99 (Mo-99) production facilities in the United States, the optimization of proliferation resistance in reactor designs, the high-assay low-enriched uranium (HALEU) recovery project, the removal and disposal of weapons-usable nuclear material, activities to disposition plutonium from the state of South Carolina, implementation of the dilute and dispose strategy for plutonium disposition, and downblending HEU.

Global Material Security (GMS)
GMS directly contributes to national security efforts to reduce global nuclear and radiological security threats and plays a leading role in implementing *National Security Memorandum-19 to Counter Weapons of Mass Destruction Terrorism and Advance Nuclear and Radioactive Material Security*. The FY 2025 Budget Request supports programs to prevent terrorists and other actors from obtaining nuclear and radioactive material to use in an improvised nuclear device (IND) or a radiological dispersal device (RDD) by working domestically and with partner countries to improve the security of vulnerable materials and facilities and to build partners' capacity to detect, disrupt, and investigate illicit trafficking of these materials. GMS works with countries in bilateral partnerships, and with multilateral partners such as the IAEA, the Global Partnership against the Spread of Weapons and Materials of Mass Destruction, the WCO, the United Nations Office on Drugs and Crime (UNODC), and INTERPOL. GMS is leveraging its over 20 years of security expertise and global presence in over 100 countries to respond and adapt to the changing threat environment. Across its three subprograms, GMS is reinforcing partnerships in Eastern Europe, Central Asia, and Southeast Asia to counter Russian and Chinese influence, expanding its work to bolster energy security of critical nuclear power plants, promoting security-by-design for advances and small modular reactors, increasing its investment in non-radioisotopic alternative technologies, and continues to expand its counter nuclear smuggling engagement with law enforcement and security institutions.

Nonproliferation and Arms Control (NPAC)
NPAC programs contribute to standing DOE/NNSA statutory and treaty/agreement obligations and authorities, prevent nuclear and dual-use technology from being exploited or diverted by adversaries, identify emerging technologies of potential proliferation concern, and consider ways to mitigate them. NPAC programs also strengthen the international nuclear safeguards regime and the IAEA's ability to verify peaceful uses of nuclear materials and facilities and detect non-compliance or illicit diversion of materials, reduce proliferation concerns by enabling verifiable arms reductions, and support negotiation and implementation of U.S. nonproliferation and arms control treaties and agreements, while upholding U.S. requirements for maintaining a safe, secure, and reliable nuclear weapons stockpile are met. The FY 2025 Budget Request supports IAEA and partner countries' efforts to implement international safeguards obligations, builds domestic and international capacity to implement export control obligations, supports the negotiation and implementation of agreements and associated monitoring regimes to verifiably reduce nuclear weapons and nuclear programs, continues development of the Arms Control Advancement Initiative (ACAI) including detailed planning for construction related to the high-fidelity verification user facility, and develops approaches and strategies to address emerging nonproliferation and arms control challenges and opportunities. NPAC provides export control and safeguards training to Ukraine to promote safeguards implementation to help prevent illicit trafficking in nuclear and WMD-related materials, commodities, and technology.

Defense Nuclear Nonproliferation Research and Development (DNN R&D)
DNN R&D directly contributes to nuclear security by developing U.S. capabilities to detect and characterize global nuclear security threats in full coordination with the goals and priorities of U.S. Government mission stakeholders across nonproliferation, counterterrorism, and emergency response mission areas. In addition, DNN R&D sustains and develops

foundational nonproliferation technical capabilities that ensure the technical agility needed to support a broad spectrum of U.S. nonproliferation missions and anticipate threats. To do these activities, DNN R&D leverages the unique facilities and scientific skills of DOE, academia, and industry to perform research and demonstrate advances in capabilities, develop prototypes, and produce sensors for integration into operational systems. The FY 2025 Budget Request supports planned activities for the early detection of proliferation-related R&D and continued production of nuclear detonation detection satellite payloads. The request also supports continued efforts to sustain and develop foundational nonproliferation technical capabilities by providing targeted, long-term support for enabling infrastructure, science and technology, and an expert workforce. Additionally, it continues to develop and maintain advanced technical nuclear forensics analysis capabilities at the U.S. national laboratories that can support time-critical decisions in the event of a nuclear or radiological incident or assist in determining the origin of interdicted materials or nuclear devices.

Nonproliferation Construction

Nonproliferation Construction consolidates construction costs for DNN projects. The Surplus Plutonium Disposition (SPD) project will add additional glovebox capacity at the Savannah River Site to accelerate plutonium dilution and aid in the removal of plutonium from the state of South Carolina. The FY 2025 Budget Request supports completing the final design review and activities to request CD-2/3, *Approval of Performance Baseline and Start of Construction*, to initiate full construction on the SPD project.

Nuclear Counterterrorism and Incident Response Program (NCTIR)

- **Counterterrorism and Counterproliferation (CTCP)**
  The CTCP subprogram provides the Nation's technical capability to understand and defeat nuclear devices, including improvised nuclear devices (INDs) and lost or stolen foreign nuclear weapons. This knowledge in turn informs U.S. Government policies, regulations, and key interagency mission partners on terrorist and proliferant state nuclear threats and related contingency planning. In support of the nuclear counterterrorism mission, the FY 2025 Budget Request for NCTIR supports programs to manage and deploy the DOE/NNSA Nuclear Emergency Support Team (NEST), comprised of scientific and technical experts who are trained and equipped to respond rapidly to nuclear or radiological incidents and accidents worldwide. NEST includes nuclear forensics capabilities which support identifying the origin of nuclear material interdicted outside of regulatory control or used in a nuclear attack. Additionally, CTCP builds international partner capacity to respond effectively to nuclear or radiological incidents in their countries. Finally, CTCP integrates DOE/NNSA policy, planning, and operations on counterproliferation priorities, supporting urgent needs, and proactively pursuing opportunities to prevent nuclear threats and develop technologies to apply to the counterproliferation mission.

- **Emergency Management (EM)**
  The EM subprogram provides the structure and processes to support a comprehensive and integrated approach to all-hazards emergency management. The EM subprogram improves the readiness and effectiveness of the DOE Emergency Management System and the Nuclear Security Enterprise on a programmatic and performance level to deal with all types of emergencies impacting the DOE/NNSA enterprise or its equities anywhere in the world. This promotes unity of effort and a culture of continuous improvement to safeguard the health and safety of workers and the public, protect the environment, and enhance the resilience of the Department and the Nation.

The Defense Nuclear Nonproliferation appropriation FY 2025 Budget Request supports the following key priorities:

DNN Programs

- Convert and/or verify the shutdown of one research reactor and isotope production facility.
- Eliminate excess HEU and plutonium, including removing and/or confirming the disposition of 10 kilograms of material.
- Disposition plutonium from the state of South Carolina and dispose of 34 metric tons of plutonium.
- Eliminate surplus HEU by downblending it to LEU, or through direct disposal with a priority on legacy material to reduce operating risk in deteriorating infrastructure.
- Complete final design to support Critical Decision (CD) 2/3, Approve Performance Baseline/Approve Start of Construction, for the SPD Project.

- Sustain and build upon previous upgrades at nuclear facilities and reduce the risk of sabotage at facilities in key locations and engage bilaterally and regionally with partners on nuclear security topics, including insider threat mitigation, cyber security, transportation security, nuclear material control and accounting, physical security, and emergent technologies.
- Support security analyses of advanced reactor classes; engage with industry on Security-by-Design for advanced reactors; and expand engagements with nuclear newcomer countries on nuclear security infrastructure development.
- Secure buildings with high-priority radioactive sources.
- Promote and facilitate the adoption of viable alternative technologies that do not use high-activity radioactive sources with a focus on replacement of cesium and cobalt devices.
- Enhance capabilities to manage disused sources safely and securely and build international partner capacity.
- Deploy and support sustainable counter nuclear smuggling solutions to detect, disrupt, and investigate the illicit trafficking of nuclear and radioactive material through critical pathways.
- Provide critical mission support to the IAEA, including strengthening the international nuclear safeguards system and supporting its expanding nuclear security activities.
- Continue implementation of Advanced Reactor International Safeguards Engagement (ARISE) program, including working with key stakeholders to incorporate Safeguards-by-Design elements into advanced reactor designs.
- Implement ACAI to develop the needed facilities and personnel to sustain DOE/NNSA's arms control mission and accelerate the development of new technologies and approaches.
- Facilitate U.S. trade by providing roughly 6,000 technical reviews of U.S. export license applications, and technical support and training to U.S. law enforcement to help prevent the exploitation of the U.S. industrial base.
- Build global export control capacity through training, technical exchanges, and train-the-trainer approaches.
- Provide nonproliferation assessments of emerging nuclear technologies and other emerging strategic risks.
- Demonstrate new U.S. capabilities for detecting foreign material and weapons production processes.
- Demonstrate new capabilities for weapons and material security applications, including detecting special nuclear material movement and diversion and nuclear safeguards.
- Sustain and improve U.S. nuclear explosion monitoring capabilities, including delivering the Nation's space-based nuclear detonation detection payloads and related activities that support treaty monitoring and military missions.
- Sustain and develop long-term, foundational nonproliferation technical capabilities that ensure the technical agility needed to support a broad spectrum of U.S. nonproliferation missions and anticipate threats.
- Advance technical nuclear forensics analysis capabilities that support the U.S. Government response to a nuclear event, with an emphasis on advancing timelines to support attribution and novel approaches to material provenance.
- Establish the space-based monitoring and verification program (Space MVP) to address emerging challenges in the space environment.
- Support the Counterterrorism and Counterproliferation program in addressing requirements under Executive Order (EO 11410) on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence (AI) to support AI red-teaming.

NCTIR Programs

Counterterrorism and Counterproliferation (CTCP)

- Enhance capabilities to counter nuclear and radiological threats—including improved tools to locate, characterize, defeat, and conduct forensics on these threats.
- Sustain training and maintain equipment for regional and national weapon of mass destruction (WMD) terrorism response capabilities.
- Begin the second phase of the Capability Forward initiative by developing a standardized NEST technical training program to be delivered to Federal Bureau of Investigation (FBI) field office responders, focused on actions to Secure and Defeat WMD Devices.
- Detect, measure, and track radioactive material in an emergency to determine contamination levels through the Aerial Measuring System.
- Provide security and assessment capabilities for non-stockpile nuclear threat device designs, including INDs.
- Develop technical and policy solutions to counter nuclear proliferation.
- Develop nuclear forensics capabilities to accelerate attribution timelines.
- Enable development, implementation, and demonstration of comprehensive Red Teaming capabilities for a wide range of open-source and industry Artificial Intelligence (AI) systems.

- Deliver training and build capacity for domestic and international partners on nuclear counterterrorism and emergency preparedness and response.
- Begin dedicated CTCP infrastructure recapitalization planning.

Emergency Management (EM)
- Advance emergency management training, exercise, and certification programs.
- Serve as the focal point of the DOE and DOE/NNSA Continuity Programs and higher-level continuity programs.
- Lead, manage, and operate the DOE/NNSA Headquarters Emergency Operations Center 24/7/365.
- Execute the Emergency Readiness Assurance Reporting Program.
- Lead the design and development of the DOE 5-Year Exercise Schedule.
- Institutionalize the Federal Mission Resilience Strategy (FMRS), to include a viable devolution capability.
- Ensure and improve interoperability of continuity communications systems across DOE/NNSA and with interagency partners.

Legacy Contractor Pensions and Settlement Payments
This budget line includes funding for the Requa settlement reached in 2019 as well as DOE's annual reimbursement made to the University of California (UC) Retirement Plan (UCRP) for former UC employees and annuitants who worked at the Lawrence Livermore National Laboratory (LLNL) and Los Alamos National Laboratory (LANL).

The *Requa* lawsuit involved UC employees of LLNL who retired prior to the Laboratory's transition to a new contractor on October 1, 2007. The retirees had been receiving health insurance through a UC health plan but when the LLNL contract transitioned to LLNS, the employees were offered health insurance through the new LLNL contractor, leading the retirees to file a lawsuit seeking reinstatement into the UC health plan. The parties settled the lawsuit in 2019, and a final judgment was issued in April 2020. DOE/NNSA agreed, pursuant to the legacy UC-LLNL Contract, to provide UC a portion of the total costs to settle the lawsuit, over a period of seven years through FY 2026. DOE/NNSA's responsibility for FY 2025 is $9 million.

This budget line also continues to include the DNN share of the DOE's annual reimbursement made to the UC Retirement Plan (UCRP) for former UC employees and annuitants who worked at the LLNL and LANL. The annual reimbursement is based on the actuarial valuation report and an annual assessment provided by UC and is covered by the terms described in the contracts. These contracts are paid through the Legacy Contractor Pensions and Settlement Payments line item.

The DNN share of these costs in the FY 2025 Budget is $11,736,000 which will be partially funded with prior year balances.

Entry Level Hires
DOE/NNSA supports a variety of programs to help train and recruit the next generation of leaders in managing the nuclear stockpile, nonproliferation, nuclear security, and international security, such as the NNSA Graduate Fellowship Program (NGFP), and, where appropriate, the Presidential Management Fellows (PMF) program. These programs foster the pipeline of qualified professionals who will sustain expertise in these areas through future employment within the nuclear security enterprise. In FY 2025, the DNN appropriation projects providing $3.3 million for NGFP support and development activities.

DOE Working Capital Fund (WCF) Support
The DOE/NNSA DNN appropriation projected contribution to the DOE WCF for FY 2025 is $4,620,000. This funding covers shared enterprise activities including managing enterprise-wide systems and data, telecommunications, and supporting the integrated acquisition environment.

Defense Nuclear Nonproliferation
Funding by Congressional Control ($K)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 vs FY 2023	
				$	%
Defense Nuclear Nonproliferation Appropriation					
Defense Nuclear Nonproliferation					
Material Management and Minimization[a]					
Reactor Conversion and Uranium Supply	203,169	203,169	145,227	-57,942	-28.5%
Nuclear Material Removal and Elimination	55,000	55,000	38,825	-16,175	-29.4%
Plutonium Disposition	206,116	206,116	193,045	-13,071	-6.3%
Total, Material Management and Minimization	464,285	464,285	377,097	-87,188	-18.8%
Global Material Security					
International Nuclear Security	87,763	87,763	87,768	+5	+0.0%
Radiological Security	260,000	260,000	260,000	+0	+0.0%
Nuclear Smuggling Detection and Deterrence	185,000	185,000	196,096	+11,096	+6.0%
Total, Global Material Security	532,763	532,763	543,864	+11,101	+2.1%
Nonproliferation and Arms Control	230,656	230,656	224,980	-5,676	-2.5%
Defense Nuclear Nonproliferation R&D					
Proliferation Detection	299,283	299,283	317,158	+17,875	+6.0%
Nuclear Detonation Detection	279,205	279,205	323,058	+43,853	+15.7%
Nonproliferation Fuels Development	20,000	20,000	0	-20,000	-100.0%
Forensics R&D	44,414	44,414	37,759	-6,655	-15.0%
Nonproliferation Stewardship Program	125,000	125,000	124,875	-125	-0.1%
Total, Defense Nuclear Nonproliferation R&D	767,902	767,902	802,850	+34,948	+4.6%
NNSA Bioassurance Program	20,000	20,000	0	-20,000	-100.0%
Nonproliferation Construction					
18-D-150 Surplus Plutonium Disposition Project, SRS	71,764	71,764	40,000	-31,764	-44.3%
Total, Nonproliferation Construction	71,764	71,764	40,000	-31,764	-44.3%
Total, Defense Nuclear Nonproliferation Programs	2,087,370	2,087,370	1,988,791	-98,579	-4.7%

[a] Material Management and Minimization (M3) proposes a restructure in the FY 2025 budget to better align program activities and support mission-critical goals. This new budget structure will increase transparency by creating clear delineations between the M3 programs. The alignment would be Reactor Conversion and Uranium Supply Program, Nuclear Material Removal and Elimination Program and Plutonium Disposition Program.

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 vs FY 2023	
				$	%
Nuclear Counterterrorism Incident Response Program					
Emergency Management	**29,896**	**29,896**	**23,847**	**-6,049**	**-20.2%**
Counterterrorism and Counterproliferation	**440,074**	**440,074**	**512,342**	**+72,268**	**+16.4%**
Total, Nuclear Counterterrorism Incident Response Program	**469,970**	**469,970**	**536,189**	**+66,219**	**+14.1%**
Legacy Contractor Pensions	**55,708**	**55,708**	**7,128**	**-48,580**	**-87.2%**
Subtotal, Defense Nuclear Nonproliferation Appropriation	**2,613,048**	**2,613,048**	**2,532,108**	**-80,940**	**-3.1%**
Use of Prior Year Balances	**-123,048**	**-123,048**	**-67,000**	**+56,048**	**-45.5%**
Total, Defense Nuclear Nonproliferation Appropriation	**2,490,000**	**2,490,000**	**2,465,108**	**-24,892**	**-1.0%**
Rescission					
Ukraine Supplemental Appropriations Act 2023	35,000				
Additional Ukraine Supplemental Appropriations Act 2023	126,300				

Small Business Innovation Research (SBIR)/ Small Business Technology Transfer (STTR):

- FY 2023 Enacted: SBIR: $15,282; STTR: $0
- FY 2024 Annualized CR: SBIR: $15,282; STTR: $0
- FY 2025 Request to OMB: SBIR $15,435; STTR: $0

Defense Nuclear Nonproliferation
Funding by Congressional Control
Outyear Funding ($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Defense Nuclear Nonproliferation Appropriation				
Defense Nuclear Nonproliferation				
Material Management and Minimization				
Reactor Conversion and Uranium Supply	**118,130**	**104,168**	**107,270**	**121,011**
Nuclear Material Removal and Elimination	**39,350**	**40,700**	**40,700**	**41,315**
Plutonium Disposition	**231,356**	**260,755**	**266,589**	**271,201**
Total, Material Management and Minimization	**388,836**	**405,623**	**414,559**	**433,527**
Global Material Security				
International Nuclear Security	**88,964**	**89,310**	**89,979**	**94,813**
Radiological Security	**263,907**	**271,823**	**273,858**	**289,185**
Nuclear Smuggling Detection and Deterrence	**198,078**	**200,281**	**230,802**	**242,809**
Total, Global Material Security	**550,949**	**561,414**	**594,639**	**626,807**
Nonproliferation and Arms Control	**222,870**	**224,483**	**239,193**	**243,029**
Defense Nuclear Nonproliferation R&D				
Proliferation Detection	**319,476**	**335,651**	**341,064**	**346,978**
Nuclear Detonation Detection	**330,952**	**336,076**	**341,255**	**348,085**
Nonproliferation Fuels Development	**0**	**0**	**0**	**0**
Forensics R&D	**40,460**	**40,818**	**41,675**	**42,877**
Nonproliferation Stewardship Program	**129,683**	**131,319**	**134,383**	**136,397**
Total, Defense Nuclear Nonproliferation R&D	**820,571**	**843,864**	**858,377**	**874,337**
NNSA Bioassurance Program	**0**	**0**	**0**	**0**
Nonproliferation Construction				
U.S. Construction				
18-D-150 Surplus Plutonium Disposition Project, SRS	**50,980**	**59,354**	**41,540**	**13,080**
Total, Nonproliferation Construction	**50,980**	**59,354**	**41,540**	**13,080**
Total, Defense Nuclear Nonproliferation Programs	**2,034,206**	**2,094,738**	**2,148,308**	**2,190,780**
Nuclear Counterterrorism and Incident Response Program				
Emergency Management	**33,122**	**33,534**	**34,667**	**34,933**
Counterterrorism and Counterproliferation	**513,740**	**515,240**	**516,740**	**532,041**
Total, Nuclear Counterterrorism and Incident Response Program	**546,862**	**548,774**	**551,407**	**566,974**
Legacy Contractor Pensions and Settlement Payments	20,993	14,128	14,368	14,292
Total, Defense Nuclear Nonproliferation Appropriation	**2,602,061**	**2,657,640**	**2,714,083**	**2,772,046**

Material Management and Minimization

Overview

The Material Management and Minimization (M3) program aims to reduce and, when possible, eliminate nuclear materials and provide sound management principles for materials that remain. This includes minimizing the civilian use and production of highly enriched uranium (HEU) and plutonium; removing or eliminating nuclear materials internationally; and disposing of excess nuclear material in the United States. The M3 Budget Request presents an integrated approach to addressing the persistent threat posed by the global stockpile of nuclear materials.

M3 directly contributes to, and plays a critical role in, reducing global nuclear security threats and promoting U.S. national security. M3 makes these strategic contributions through the conversion of research reactors and medical isotope production facilities to use non-weapons-usable nuclear material, the provision of high-assay low enriched uranium (HALEU) for those facilities, the removal of excess HEU and separated plutonium, and the disposition of HEU and plutonium.

M3 proposes to restructure its FY 2025 budget to better align program activities and support mission-critical goals. This new budget structure will increase transparency by creating clear delineations between the M3 offices (Convert, Remove, and Dispose). The FY 2025 budget proposes the following changes:

Current Control Level Name	Proposed Change
Conversion	Reactor Conversion and Uranium Supply
Nuclear Material Removal	Nuclear Material Removal and Elimination
Material Disposition	Plutonium Disposition

The rationale for these proposed changes is threefold:

- First, the budget restructure will move all uranium work scope that was previously under Material Disposition to Reactor Conversion and Uranium Supply. This will consolidate M3's uranium work within a single budget line including HALEU supply and domestic uranium downblending and disposition activities. This budget line will continue to include reactor conversion/HALEU fuel qualification and proliferation resistance optimization work.
- Second, the budget restructure from Material Disposition to Plutonium Disposition will highlight surplus plutonium disposition. This issue has taken on increased importance and visibility as DOE/NNSA is working to uphold its agreement with the state of South Carolina and other stakeholders.
- Third, Nuclear Material Removal and Elimination will continue to fund work with both uranium and plutonium by removing and eliminating material internationally. The proposed name change reflects the expanded workscope of eliminating weapons-usable nuclear materials in-place globally.

The following tables display M3's funding under its current structure as well as how the funding would be aligned under the new proposed budget structure:

Material Management and Minimization
Funding (Comparable) ($K)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
Material Management and Minimization					
Reactor Conversion and Uranium Supply	**203,169**	**203,169**	**145,227**	**-57,942**	**-28.5%**
Nuclear Material Removal and Elimination	**55,000**	**55,000**	**38,825**	**-16,175**	**-29.4%**
Plutonium Disposition	**206,116**	**206,116**	**193,045**	**-13,071**	**-6.3%**
Total, Material Management and Minimization	**464,285**	**464,285**	**377,097**	**-87,188**	**-18.8%**

Material Management and Minimization
Outyear Funding (Comparable) ($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Material Management and Minimization				
Reactor Conversion and Uranium Supply	**118,130**	**104,168**	**107,270**	**121,011**
Nuclear Material Removal and Elimination	**39,350**	**40,700**	**40,700**	**41,315**
Plutonium Disposition	**231,356**	**260,755**	**266,589**	**271,201**
Total, Material Management and Minimization	**388,836**	**405,623**	**414,559**	**433,527**

Material Management and Minimization
Funding (Non-Comparable) ($K)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 vs FY 2023	
				$	%
Material Management and Minimization					
Conversion	**153,260**	**203,169**			
Nuclear Material Removal	**55,000**	**55,000**			
Material Disposition	**256,025**	**206,116**			
Reactor Conversion and Uranium Supply			**145,227**	**-8,033**	**-5.2%**
Nuclear Material Removal			**38,825**	**-16,175**	**-29.4%**
Plutonium Disposition			**193,045**	**-62,980**	**-24.6%**
Total, Material Management and Minimization	**464,285**	**464,285**	**377,097**	**-87,188**	**-18.8%**

Material Management and Minimization
Outyear Funding (Non-Comparable) ($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Material Management and Minimization				
Reactor Conversion and Uranium Supply	**118,130**	**104,168**	**107,270**	**121,011**
Nuclear Material Removal and Elimination	**39,350**	**40,700**	**40,700**	**41,315**
Plutonium Disposition	**231,356**	**260,755**	**266,589**	**271,201**
Total, Material Management and Minimization	**388,836**	**405,623**	**414,559**	**433,527**

	Proposed FY 2025 Budget Structure ($K)			
	Material Management and Minimization	Material Management and Minimization	Material Management and Minimization	Total
	Uranium Supply and Reactor Conversion	Nuclear Material Removal and Eliminattion	Plutonium Disposition	
FY 2024 Budget Structure				
Material Management and Minimization				
Conversion	121,887	0	0	121,887
U.S. Uranium Disposition	0	0	0	0
Nuclear Material Removal	0	38,825	0	38,825
Material Disposition	23,340	0	193,045	216,385
U.S. Plutonium Disposition	0	0	191,215	191,215
U.S. Uranium Disposition	23,340	0	0	23,340
International Plutonium Disposition	0	0	1,830	1,830
Material Management and Minimization	**145,227**	**38,825**	**193,045**	**377,097**

Material Management and Minimization
Explanation of Major Changes[a] ($K)

	FY 2025 Request vs FY 2023 Enacted
Material Management and Minimization	
Reactor Conversion and Uranium Supply: Decrease due to two changes: (1) a redistribution of current and out-year budget requests for HALEU scrap recovery in smaller portions per year spread for FY 2025 through FY 2027; and (2) the full funding of the Down-Blending Offering for Tritium (DBOT) and DBOT Add-On 1 contracts in prior fiscal years for the uranium optimization program (formerly the uranium disposition program).	**-57,942**
Nuclear Material Removal and Elimination: The decrease reflects the completion of funding in FY 2024 to support the removal of HALEU from a partner country.	**-16,175**
Plutonium Disposition: The decrease reflects the deferral of the pit disassembly and processing (PDP) capability by at least ten years.	**-13,071**
Total, Material Management and Minimization	**-87,188**

[a] Explanation of Changes amounts assume a comparable budget structure in FY 2023 to what M3 proposes in FY 2025.

Material Management and Minimization
Reactor Conversion and Uranium Supply

Description

The Reactor Conversion and Uranium Supply subprogram, referred to as the Convert subprogram, will support the implementation of key domestic and international nuclear nonproliferation activities addressing HEU and/or plutonium minimization. The Convert subprogram supports the conversion of domestic and international civilian research reactors and isotope production facilities to use non-weapons-usable nuclear materials. The subprogram also includes activities to disposition 186 MT of HEU by downblending it and making the resulting low-enriched uranium (LEU) available for tritium production or the resulting HALEU available for research reactors and medical isotope production. These efforts result in permanent threat reduction by minimizing and, to the extent possible, eliminating the use of HEU in civilian applications.

Currently, the Convert subprogram has converted or verified the shutdown of 109 HEU research reactors and isotope production facilities worldwide, including all major global Mo-99 producers. In support of this effort, Convert is working domestically to qualify high-density HALEU fuels and to demonstrate and set up the fabrication capability necessary to convert six U.S High Performance Research Reactors (USHPRR) from HEU to HALEU fuel. The Convert subprogram also is working internationally to convert and verify the shutdown of HEU-fueled reactors around the world, including providing technical support on European Fuel Development activities. Funding will also support the development and implementation of the proliferation resistance optimization (PRO-X) program, where the subprogram will work with partners around the world on the design of new-build research reactors, and associated facilities, to explore technical options to reduce the ability for these facilities to be misused for proliferation purposes.

Funding will be used to execute technical work at the U.S. national laboratories to support domestic Mo-99 commercial entities. Given the advanced stage of the technology for many of the U.S. companies, there is a reduced need for laboratory technical support compared to prior FYs. The Convert subprogram uses prior-year cooperative agreement (CA) funding to further the development of domestic facilities for Mo-99 production without the use of HEU. The last major global Mo-99 producer converted to 100 percent HALEU-based Mo-99 production in 2023, ending the need for the Convert subprogram's assistance in converting international Mo-99 facilities from using HEU to HALEU targets.

The Convert subprogram supports DOE and NNSA's HALEU supply and uranium enrichment initiatives and has substantially reduced excess holdings of HEU throughout the DOE/NNSA complex. The Convert subprogram identified 2.2 metric tons of HALEU scrap material at Y-12 that will be packaged and shipped to BWX Technologies (BWXT) for processing into a usable form. Approximately 375 kilograms of additional HALEU material already located at BWXT will also be processed. This project will support the Y-12 transition to the Uranium Processing Facility (UPF) by clearing material out of Y-12's Building 9212 and enabling the United States to make HALEU available for future conversions and new reactor builds. The subprogram also supports the Down-Blending Offering for Tritium (DBOT) contract, which runs from FY 2019 through FY 2027. Although DBOT primarily is a NNSA Defense Programs contract, the subprogram is responsible for managing and funding a portion to support excess HEU disposition. In addition, the subprogram will disposition legacy material and low-equity discards stored at Y-12 to reduce risk due to the deteriorating infrastructure and to support the timely transition to the UPF. The HEU Thorium/Building 9206, Area 5 De-inventory (A5D), and Building 9212 discards will be completed by the end of FY2025, with offsite shipments occurring by the end of FY 2026.

Highlights of the FY 2025 Budget Request

- Convert research reactors from the use of HEU fuel to LEU fuel or verify the shutdown of HEU-fueled research reactors, both domestically and internationally.
- Conduct irradiation experiments to support qualifying first-of-a-kind high-density HALEU fuels for research reactors.
- Provide non-proprietary technical support from the U.S. national laboratories to domestic Mo-99 commercial entities to help establish a reliable commercial supply of Mo-99 produced without HEU.
- Pack and deliver scrap material from Y-12 to BWXT and produce limited quantities of HALEU.
- Collaborate on increasing proliferation resistance in new research reactor designs and further define measurable metrics in proliferation resistance.

- Eliminate surplus HEU by downblending it to LEU or HALEU, or through direct disposal with a priority on legacy material to reduce operating risk in deteriorating infrastructure.

FY 2023 Accomplishments

- Completed conversion of Belgium's Mo-99 producer (IRE). All major global Mo-99 producers have now converted from HEU to HALEU targets.
- Shipped over 300 kg HALEU scrap material from Y-12 to BWXT to be processed into useable HALEU.
- Began irradiating commercially fabricated HALEU mini-plates at Idaho National Laboratory's Advanced Test Reactor, which will provide data that will be submitted to NRC to qualify HALEU fuel for the USHPRRs.
- Received regulatory approval to begin fabricating HALEU for Japan KUCA conversion.
- Established partnership with Nigeria to incorporate proliferation resistance principles into the design of their new research reactor.

Reactor Conversion and Uranium Supply
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Reactor Conversion and Uranium Supply $203,169,000	**Reactor Conversion and Uranium Supply $145,227,000**	**Reactor Conversion and Uranium Supply -$57,942,000**
• Conducted activities to support converting or verifying the shutdown of one facility. • Conducted HALEU fuel qualification and fabrication activities for research reactors both domestically and internationally. • Supported DOE's and DOE/NNSA's HALEU supply initiatives. • Packed and shipped material from Y-12 to BWXT and began production of limited quantities of HALEU. • Provided technical support to the U.S. private sector to support establishment of a reliable domestic production capability for Mo-99 without the use of HEU. • Conducted PRO-X activities addressing HEU and/or plutonium to reduce the risk of potential misuse or production of weapons-usable material. • Implemented the Uranium Lease and Take Back (ULTB) program.	• Conduct activities to convert or verify the shutdown of one facility. • Conduct HALEU fuel qualification and fabrication activities for research reactors both domestically and internationally. • Support DOE's and DOE/NNSA's HALEU supply initiatives. • Pack and ship material from Y-12 to BWXT and produce limited quantities of HALEU. • Provide technical support to the U.S. private sector to support establishment of a reliable domestic production capability for Mo-99 without the use of HEU. • Collaborate on increasing proliferation resistance in new research reactor designs. • Implement the ULTB program. • Downblend or ship for downblending HEU to produce LEU consistent with specifications. • Downblend HEU into HALEU metal for research reactor fuel and for Mo-99 targets. • Conduct cleanup of legacy material in Y-12's Building 9206, Building 9212, and the A5D to reduce risk. • Support tracking and analyzing enriched uranium supply and demand needs and commitments to meet DNN mission goals.	• The overall decrease is mainly due to two changes: (1) About half of the decrease is driven by a requirement for HALEU scrap recovery at Y-12; and (2) the full funding in prior years of the Down-Blending Offering for Tritium (DBOT) and DBOT Add-On 1 contracts for the uranium optimization program (formerly the uranium disposition program).

Material Management and Minimization
Nuclear Material Removal and Elimination

Description

The Nuclear Material Removal and Elimination subprogram, referred to as the Remove subprogram, supports the removal, consolidation, and disposal of weapons-usable nuclear material internationally to support permanent threat reduction. Each kilogram of excess nuclear material that is removed from civilian sites worldwide reduces the risk of a terrorist or other malevolent actor acquiring HEU or plutonium for use in an improvised nuclear device. The subprogram directly advances U.S. and global HEU minimization objectives.

This subprogram consists of two primary lines of effort: 1) Nuclear Material Removal and Consolidation and 2) Mobile Packaging. Under Nuclear Material Removal and Consolidation, the Remove subprogram supports the removal, consolidation, and disposal of weapons-usable nuclear material from civilian facilities around the world. This material includes unirradiated and irradiated HEU of U.S.-origin, Russian-origin, and other origins, as well as separated plutonium. On a case-by-case basis, in support of nonproliferation objectives, some U.S.-origin LEU may be repatriated to the United States. The subprogram has also developed new capabilities, such as the Mobile Melt-Consolidate (MMC) system, to address inventories of weapons-usable nuclear material that do not currently have a disposition pathway and avoid bringing the material to the United States. MMC is a mobile platform for stabilizing excess nuclear material and converting it into a more proliferation-resistant, low-attractiveness waste form that can be readily disposed in a storage facility or repository outside the U.S. Construction of the MMC system was completed in FY 2024 and it will be deployed to Norway in FY 2025 to downblend its remaining inventories of HEU. The subprogram will begin to construct a second MMC system in FY 2025 to support downblending activities in other partner countries. Additionally, in FY 2023, the subprogram finalized the framework for an initiative called the Nuclear Infrastructure Threat Reduction (NITR) program and has identified initial partner countries. NITR will advance the office's permanent risk reduction mission by eliminating sensitive nuclear infrastructure at research reactor facilities that are being decommissioned so that the equipment cannot be sold, transferred, or diverted for unauthorized use.

The Remove subprogram evaluates excess weapons-usable nuclear material located at civilian sites abroad to prioritize candidate material for removal or disposition. Furthermore, the subprogram works with foreign partners to obtain regulatory permits; characterize, stabilize, package, and transport material; and provide replacement LEU or other incentives for other than high income economy countries to encourage elimination of these materials. Additionally, the subprogram coordinates all future U.S. receipts with relevant DOE stakeholders, such as the Office of Environmental Management (EM), to enable long-term planning and appropriate resource allocation.

Under Mobile Packaging, the Remove subprogram maintains the capability to promptly respond to enable the safe and secure removal of nuclear material worldwide. This specialized capability focuses on addressing HEU and plutonium inventories using the Mobile Uranium Facility (MUF) and the Mobile Plutonium Facility (MPF). Both the MUF and MPF include specialized teams and mobile facilities needed to conduct in-country characterization, stabilization, packaging, and removal of nuclear materials. The Mobile Packaging program undertakes full-scale and small-scale training exercises with the MUF and MPF to maintain team proficiency and ensure both facilities are ready to be deployed on short notice.

Highlights of the FY 2025 Budget Request

- Eliminate excess HEU and plutonium, including removing and/or confirming the disposition of 10 kilograms of nuclear material.
- Conduct a small-scale training exercise of the Mobile Packaging capabilities.

FY 2023 Accomplishments

- Removed more than 49 kilograms of HEU from partner countries in Asia, Europe, and North America to the United States for downblending and disposition.
- Executed Exercise Red Kite, an international training exercise using the Mobile Plutonium Facility.
- Negotiated the terms for the transfer of over 1.7 MT of HALEU from a partner country to the United States by December 2025.

Nuclear Material Removal and Elimination
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Nuclear Material Removal and Elimination **$55,000,000**	**Nuclear Material Removal and Elimination** **$38,825,000**	**Nuclear Material Removal and Elimination** **-$16,175,000**
• Removed and/or confirmed the disposition of an additional 10 kilograms of HEU and/or plutonium. • Sustained the MUF and MPF equipment and performed off-site readiness exercises that practiced the MUF and MPF's capabilities. • Prepared to remove HALEU from a partner country.	• Remove and/or confirm the disposition of an additional 10 kilograms of HEU and/or plutonium. • Sustain the MUF and MPF equipment and perform off-site readiness exercises that practice the MUF and MPF's capabilities. • Work with partner countries to identify and eliminate sensitive nuclear infrastructure from decommissioning research reactors. • Remove HALEU from a partner country.	• Reduction reflects the completion of funding in FY 2024 to support the removal of HALEU from a partner country.

Material Management and Minimization
Plutonium Disposition

Description

The Plutonium Disposition subprogram, referred to as the Dispose subprogram, is responsible for disposing of surplus plutonium in a safe and secure manner so that it can never be used in nuclear weapons. The subprogram includes activities to disposition 34 metric tons (MT) of surplus plutonium using the dilute and dispose strategy, whereby plutonium is mixed with a multicomponent adulterant and packaged, characterized, and permanently disposed of as defense-related contact-handled transuranic (TRU) waste at the WIPP.

The first shipment of downblended surplus plutonium from K-Area at Savannah River Site (SRS) to WIPP was completed in December 2022. A total of 13 shipments of downblended surplus plutonium were made to WIPP in FY 2023. In FY 2025, the Dispose subprogram will conduct activities to remove and dispose of additional plutonium from the state of South Carolina including maintaining staffing for ongoing downblend and waste characterization operations in K-Area at SRS. The Dispose subprogram will initiate hiring, training, and qualification for additional operators of the new gloveboxes being installed in K-Area as part of the Surplus Plutonium Disposition (SPD) project. Several minor construction projects are also underway at SRS to support the plutonium disposition effort. An Environmental Impact Statement (EIS) for the 34 MT mission was published in January 2024 and a Record of Decision is expected to be issued in FY 2024.

The Dispose subprogram funds surveillance, monitoring, and packaging of surplus pits at Pantex. The subprogram also executes pit disassembly and conversion activities using the existing Advanced Recovery and Integrated Extraction System (ARIES) capability at Los Alamos National Laboratory (LANL) to produce plutonium oxide in preparation for downblending. Several ongoing Major Items of Equipment (MIE) projects are underway at LANL to improve material movement efficiency, efficiently use shared resources, and address the risk of single points of failure in the ARIES process within the existing ARIES footprint. The Dispose subprogram will also disposition legacy mixed oxide (MOX) fuel materials currently stored in the LANL vault.

To disposition all 34 MT of surplus plutonium, NNSA will need to expand its PDP capability. However, considering the current volume and scope of ongoing major construction projects across the NNSA enterprise, and the lack of a clear best siting alternative, NNSA is replanning the initiation of the PDP project by ten years to align with the planned completion of pit production facilities at LANL and SRS.

The Dispose Program is developing opportunities for application of state-of-the-art science and to make the program as efficient as possible. This subprogram will evaluate system-level engineering and technical initiatives to improve the efficiency of the dilute and dispose process flowsheet and material handling activities, including the potential use of robotic and virtual reality technology.

The Dispose subprogram also is responsible for preparation of the Japan Fast Critical Assembly (FCA) plutonium fuel for disposition. DOE/NNSA is pursuing the selected approach of electrolytic dissolution using H-Canyon. Physical modifications, including installation of the spare electrolytic dissolver, began in FY 2021. The Japan Atomic Energy Agency (JAEA) provided funding for FCA fuel disposition. Per the agreement with the government of Japan, any funding needed above and beyond that will be provided by NNSA.

Furthermore, the Dispose subprogram will focus on international plutonium management strategies by developing and maintaining bilateral and multilateral working arrangements. Participating countries will work together at a technical level to support efforts to manage plutonium inventories in a way that minimizes stockpiles of excess plutonium and maximizes the security and protection of the material.

Highlights of the FY 2025 Budget Request

- Disposition plutonium from the state of South Carolina and carry out the dilute and dispose strategy to fulfill the U.S. commitment to dispose of 34 MT of surplus plutonium.

- Conduct small capital project installation and operational activities within the existing ARIES footprint to enable reliable plutonium oxide production.

FY 2023 Accomplishments

- Dispositioned 111.6 kg of NNSA surplus plutonium materials at WIPP, as of September 2023.
- Downblended 202.8 kg for a cumulative total of 477.3 kg of NNSA plutonium materials, as of September 2023, consistent with the August 2020 Amended Record of Decision.
- Maintained four-shift operations of the existing SRS K-Area downblend process.
- Produced 49.1 kg for a cumulative total of 1,310 kg of plutonium oxide in preparation for downblend, as of September 2023.
- Drafted the final SPD program EIS including resolution of over 800 public comments.

Plutonium Disposition
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Plutonium Disposition $206,116,000	**Plutonium Disposition $193,045,000**	**Plutonium Disposition -$13,071,000**
U.S. Plutonium Disposition $204,869,000	**U.S. Plutonium Disposition $191,215,000**	**U.S. Plutonium Disposition -$13,654,000**
• Carried out activities to process and dispose of plutonium from the state of South Carolina. • Resumed shipments to WIPP from the storage and characterization pad in K-Area. • Increased pit disassembly and oxide conversion activities to prepare plutonium for disposition. • Provided surveillance and packaging capabilities for surplus pits and plutonium. • Conducted technical baseline management and maturity for the dilute and dispose strategy. • Conducted National Environmental Policy Act (NEPA) analysis for the 34 MT mission.	• Carry out activities to process and dispose of plutonium from the state of South Carolina. • Continue shipments to WIPP from the storage and characterization pad in K-Area. • Perform pit disassembly and oxide conversion activities to prepare plutonium for disposition. • Conduct disposition of legacy MOX fuel materials stored at LANL. • Provide surveillance and packaging capabilities for surplus pits and plutonium. • Conduct technical baseline management and maturity for the dilute and dispose strategy.	• Reduction reflects the deferral of the pit disassembly and processing (PDP) capability by at least ten years
International Plutonium Disposition $1,247,000	**International Plutonium Disposition $1,830,000**	**International Plutonium Disposition +$583,000**
• Implemented plutonium management strategies with international partners.	• Implement plutonium management strategies with international partners.	• No significant change.

DNN Material Management and Minimization
Capital Equipment Summary

($K)

	Total	Prior Years	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 vs FY 2023 ($)
Capital Equipment (> $500K)						
Total Non-MIE Capital Equipment (TEC <$10M)	N/A	N/A	966	1,039	1,091	+125
Integrated Data Management System, SRS	18,000	0	0	18,000	0	0
Total, Capital Equipment	**N/A**	**N/A**	**966**	**19,039**	**1,091**	**125**

DNN Material Management and Minimization

Outyear Capital Equipment Summary

($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
Capital Equipment (> $500K)					
Total Non-MIE Capital Equipment (TEC <$10M)	1,126	1,150	1,174	1,199	N/A
Total, Capital Equipment	**1,126**	**1,150**	**1,174**	**1,199**	**N/A**

Global Material Security

Overview

The Global Material Security (GMS) program directly contributes to national security efforts to reduce global nuclear and radiological security threats in an increasingly complex geopolitical and technological environment. GMS also plays a leading role in implementing *National Security Memorandum-19 to Counter Weapons of Mass Destruction Terrorism and Advance Nuclear and Radioactive Material Security*.

GMS historically has focused on preventing terrorists and other non-state actors from obtaining radioactive and nuclear (R/N) material to use in an improvised nuclear device (IND) or a radiological dispersal device (RDD). While GMS continues to be concerned with non-state actors, the threats and risks associated with R/N security continue to evolve. In particular, risks and threats from state-based actors that have R/N implications have increased in recent years with these actors engaging in deliberate activities to disrupt the energy security of other nations, create cyber disruptions to critical infrastructure, and spread misinformation or disinformation. In addition, state actors, such as Russia and China, have purposefully sought to destabilize international regimes and challenge international support for longstanding standards and norms.

GMS is leveraging over 20 years of security expertise and global presence in over 100 countries to respond and adapt to these changing threats. Across all three GMS subprograms – International Nuclear Security (INS), Radiological Security (RS), and Nuclear Smuggling Detection and Deterrence (NSDD) – GMS is reinforcing partnerships in Eastern Europe, Central Asia, and Southeast Asia to counter Russian and Chinese influence and is assessing impacts of evolving technologies on security and updating program approaches accordingly. Further, each GMS subprogram continues to evolve its mission to meet changing threats and risks. INS is expanding its efforts to bolster security at key nuclear power plants and to increase engagement with nuclear newcomers and the U.S. advanced and small modular reactor industry to incorporate security by design. Drawing on the success of the Cesium Irradiator Replacement Program (CIRP), the Office of Radiological Security (ORS) continues to advance radiological risk reduction by increasing access to non-radioisotopic alternative technologies beyond cesium-137 for multiple applications, such as food irradiation, wastewater purification, medical product sterilization, and advanced cancer treatment. Lastly, NSDD has increased its number of partnerships and continues to expand engagement with law enforcement and security institutions to address trafficking pathways between official borders and in ungoverned spaces.

In addition, GMS continues to work with partners to improve the security of vulnerable materials and facilities and to improve partners' capacity to detect, disrupt, and investigate illicit trafficking of these materials. GMS promotes long-term sustainability of its capacity-building support by working with partners to develop their own regulations and inspections processes, training infrastructure, maintenance approaches, exercise and performance testing programs, life-cycle planning, and nuclear security culture. To enhance its reach and effectiveness and to bolster international regimes and norms, GMS provides technical and policy support to multilateral organizations, including the International Atomic Energy Agency (IAEA), the Global Partnership against the Spread of Weapons and Materials of Mass Destruction, the World Customs Organization (WCO), the UN Office on Drugs and Crime (UNODC), and the International Criminal Police Organization (INTERPOL).

Global Material Security
Funding ($K)

	FY 2023 Enacted*	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
Global Material Security					
International Nuclear Security	87,763	87,763	87,768	+5	0%
Radiological Security	260,000	260,000	260,000	0	0%
Nuclear Smuggling Detection and Deterrence	185,000	185,000	196,096	+11,096	+6.0%
Total, Global Material Security	**532,763**	**532,763**	**543,864**	**+11,101**	**+2.1%**

*Total does not include the Ukraine supplemental or international contributions.

Global Material Security
Outyear Funding ($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Global Material Security				
International Nuclear Security	88,964	89,310	89,979	94,813
Radiological Security	263,907	271,823	273,858	289,185
Nuclear Smuggling Detection and Deterremce	198,078	200,281	230,802	242,809
Total, Global Material Security	**550,949**	**561,414**	**594,639**	**626,807**

Global Material Security
Explanation of Major Changes ($K)

	FY 2025 Request vs FY 2023 Enacted
Global Material Security	
International Nuclear Security: No major changes.	**+5**
Radiological Security: No change.	**0**
Nuclear Smuggling Detection and Deterrence: Increase outreach to the Philippines, Thailand, South Korea, and Taiwan.	**+11,096**
Total, Global Material Security	**+11,101**

Global Material Security
International Nuclear Security

Description

The International Nuclear Security (INS) subprogram leads U.S. international nuclear security efforts by working with partner countries, international organizations, and non-governmental organizations to prevent theft and sabotage of nuclear material and protection of nuclear facilities worldwide.

DOE/NNSA's efforts to increase nuclear security worldwide have dramatically improved nuclear security around the world. However, gaps remain, and new challenges have emerged, including evolving adversary capabilities and tactics, threats from state-based actors and increasing regional conflicts, evolving technologies that impact traditional security approaches, global expansion of civil nuclear power, and increased interest in advanced and small modular reactors (A/SMRs).

To address these challenges, INS has evolved its strategy. First, INS has broadened its approach to cover nuclear power plant sabotage mitigation and security with key partners where nuclear power plants are critical to a nation's overall energy security. This new approach expands protection strategies beyond traditional target sets to include non-radiological targets that might impact the ability of a nuclear power plant to contribute to a country's energy needs for an extended period, through enhanced and tailored site security management, insider threat mitigation, physical protection, and cybersecurity practices. This approach has incorporated lessons learned from INS support to Ukraine and will be expanded to other countries with vulnerabilities to their facilities.

Second, to address the increased interest in nuclear power and new reactor types, INS engages with nuclear newcomer countries to assist them in developing the robust nuclear security measures, aligned with IAEA guidance, that must be in place as nuclear facilities come online. Regarding A/SMRs, INS is implementing a two-pronged strategy to support the secure deployment of advanced reactors. This strategy involves 1) improving the security of future exports by working with U.S. nuclear industry to incorporate security by design to ease U.S. technologies' transition into international markets, and 2) supporting nuclear security infrastructure development for those countries considering A/SMRs. Lastly, INS has a dedicated line of effort focused on understanding the risks posed by evolving technologies, such as uncrewed aircraft systems and artificial intelligence, to better inform internal analytical approaches to nuclear security and develop new security solutions.

Across all these areas, INS employs a risk-informed approach to prioritize engagements with partner countries to identify and reduce threats and risks by enhancing or building effective, comprehensive, and sustainable nuclear security regimes with its partners. These regimes must include laws, regulations, procedures, people, organizations, training, and technologies—all of which must be integrated with operations, safety, the public, and the international community.

INS leverages a variety of partnerships in pursuit of its mission, including partnerships with the IAEA, the World Institute for Nuclear Security (WINS), the Global Partnership against the Spread of Weapons and Materials of Mass Destruction, INTERPOL, non-governmental organizations, and U.S. industry. Partnering with the IAEA is of particular importance to strengthen global nuclear security norms and standards and to reinforce bilateral nuclear security risk-reduction work. INS works with the IAEA on the development of nuclear security guidance documents, advanced training, advisory missions, technical meetings, and major conferences. INS also partners with the IAEA to develop nuclear security support centers (NSSCs) that assist in sustaining a State's nuclear security infrastructure by establishing resources for training as well as technical and scientific support for nuclear security activities.

Highlights of the FY 2025 Budget Request

- Sustain and build upon previous upgrades at nuclear facilities and deepen existing bilateral relationships with more than 64 countries through technical exchanges and training on a wide range of nuclear security topics.
- Continue to support implementation of the Amended Convention on the Physical Protection of Nuclear Material (A/CPPNM) in partner states as the legally binding instrument for nuclear security, in coordination with the State Department, the Nuclear Regulatory Commission, and other G7 donor countries.
- Expand nuclear power plant sabotage mitigation efforts.

- Develop and jointly field test with advanced partners the innovative risk mitigation approaches for a range of fuel cycle facilities, including select nuclear power plants, and address nuclear security challenges posed by the ubiquity of drones and new cybersecurity attack vectors.
- Partner with the IAEA to support peer and advisory missions, enhance training capabilities, develop guidance, and conduct outreach to nuclear newcomers and partner with INTERPOL to train law enforcement agencies that engage with or support nuclear facilities worldwide.
- Increase efforts to raise nuclear security awareness for countries embarking on new or expanding existing civil nuclear power programs.
- Increase partnerships with U.S. industry on Security-by-Design for advanced reactors to support climate change and innovation goals in a secure manner.
- Establish an international working group on A/SMR security challenges and technical guidance.
- Expand efforts to promote the role of women in nuclear security and develop the next generation of nuclear security experts.

FY 2023 Accomplishments

- Bolstered the resilience of nuclear power plants in Ukraine by providing physical protection and cyber security upgrades and provided equipment to the National Guard of Ukraine to strengthen their capability to protect nuclear power plants still under Ukrainian control.
- Expanded bilateral cooperation on a wide range of nuclear security topics to 64 countries.
- Supported nuclear security upgrades at nine nuclear facilities and regulatory capacity for four nuclear newcomer countries.
- Hosted the Information Circular 908 Practitioner Workshop on insider threat mitigation (ITM) to share tools and resources across the community of practice which will support stronger ITM program implementation. Prepared for the second International Symposium on Insider Threat Mitigation in March 2024.
- Increased the number of U.S. A/SMR on Security-by-Design efforts from three to five vendor collaborations.
- Partnered with 12 countries embarking on new nuclear power programs to offer capacity building and training on considering security in the regulatory infrastructure process in line with the IAEA Milestones Approach.
- Expanded the Nuclear Power Plant Initiative on sabotage mitigation to an additional five new partners where nuclear power plants are critical to energy security.
- Partnered with the IAEA to develop an e-Learning module on nuclear security infrastructure for newcomer countries.
- Worked with the IAEA to strengthen and support the Nuclear Security Support Centers.
- Supported IAEA advisory missions, international/regional/national training courses and provided subject matter expertise to build sustainable, effective global nuclear security guidance.
- The INS Nuclear Security Women Initiative served as the Guest Editor of the International Journal for Nuclear Security's Women in Nuclear Security special edition and increased the number of abstract submissions by seven.

International Nuclear Security
Funding ($K)

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
International Nuclear Security $87,763,000	**International Nuclear Security $87,768,000**	**International Nuclear Security +$5,000**
• Expanded collaboration to 64 countries on a wide range of nuclear security issues. • Developed new engagement strategies and tools for foreign partners in the areas of insider threat, cyber security, countering uncrewed aerial systems, and other emerging or evolving technologies. • Sustained and built upon previous upgrades at nuclear facilities, included a new sabotage mitigation initiative. • Expanded engagements with nuclear newcomer countries on nuclear security infrastructure development. • Engaged in technical partnerships with industry on Security-by-Design for advanced reactors. • Supported IAEA international training courses and workshops, expert positions, guidance development, as well as activities targeting nuclear newcomers. • Supported INTERPOL's law enforcement training efforts for nuclear facilities worldwide. • Supported WINS in areas such as emerging threats and technologies. • Expanded the Nuclear Security Women initiative to create the next generation of nuclear security experts.	• Continue to deepen collaboration with current 64 partners countries on a wide range of nuclear security issues. • Expand sabotage mitigation initiative for nuclear power plants to collaborate with peer partners in addressing state actor threats. • Expand engagements with nuclear newcomer countries on nuclear security infrastructure development and capacity-building to meet sustainable development goals. • Increase partnerships with U.S. industry on Security-by-Design for advanced and small modular reactors. • Establish an international working group on A/SMR security challenges and technical guidance. • Further support implementation of A/CPPNM with partner countries both bilaterally and regionally. • Provide subject matter experts for the IAEA's International Physical Protection Advisory Service (IPPAS) missions and Integrated Nuclear Security Sustainability Plans (INSSPs), in support of A/CPPNM. • Continue to support the WINS in nuclear industry outreach. Continue to promote the role of and opportunities for women in nuclear security.	• No major change.

Global Material Security
Radiological Security

Description

The Radiological Security (RS) subprogram supports U.S. national security and plays an important role in preventing radiological terrorism at home and abroad by working with partners to secure high-risk radioactive materials that could be used in acts of terrorism. Radioactive materials are used worldwide to diagnose and treat diseases such as cancer, sterilize medical instruments, and monitor the structural integrity of materials. However, these same radioactive materials pose a risk to the safety and security of our nation if not properly protected, removed, or replaced with alternative technologies.

RS reduces the risk of radioactive materials falling into the wrong hands and being used in a radiological dispersal device (RDD). An RDD could have devastating economic and psychological consequences for the country and create panic. To mitigate that risk, RS applies a "cradle-to-grave" approach to radioactive source security by addressing vulnerabilities during all phases of the lifecycle of radioactive sources, including production, transportation, use, and end-of-life. RS leverages the unique technical capabilities of the U.S. national laboratories to develop and implement sustainable security solutions that take into consideration the needs of radioactive source users. RS has developed an integrated and comprehensive approach to security by working closely with government partners, the response community, and the private sector.

To mitigate the risk of radiological terrorism, RS employs a three-pronged strategy, which includes reducing the reliance on radioactive sources to achieve permanent risk reduction, removing disused or orphaned sources, and protecting high-activity sources.

RS prioritizes efforts to reduce reliance on radioactive sources by encouraging the transition away from radioactive sources to more secure alternatives. This transition permanently reduces risk by eliminating high-activity radioactive sources and obviating the need to introduce new sources. ORS is prioritizing efforts to develop and increase access to non-radioisotopic alternatives by supporting device replacement, education and outreach, research, and policy development. Domestically, RS disseminates information on alternative technologies and provides cost-sharing incentives to organizations willing to transition away from radioactive source-based irradiators to non-radioisotopic technologies through its Cesium Irradiator Replacement Project (CIRP). RS is on track to eliminate cesium-137 blood irradiators in the United States by December 31, 2027, as outlined in the FY 2019 National Defense Authorization Act (NDAA). RS also is increasing its focus on alternatives for cobalt-60 devices, which are often used for cancer treatment.

Next, where appropriate, RS addresses the vulnerability of disused or orphan radioactive sources by removing, consolidating into secure storage and, if possible, disposing of those sources that pose a potential risk to national security, public health, and safety through the Off-Site Source Recovery Program (OSRP). On a case-by-case basis, RS repatriates high-risk U.S.-origin sources from international locations. Additionally, RS works with partners across the globe to provide tools for safe and secure radioactive source removals and builds partners' capacity to manage disused sources themselves. Finally, RS protects high-activity radioactive materials located at vulnerable locations (e.g., hospitals, universities) in the United States and worldwide. Since the program began, RS has secured more than 2,500 buildings around the world with high-risk radioactive material. Domestically, RS works in close cooperation with radioactive material users, industry partners, state regulators, and the Nuclear Regulatory Commission. Additionally, an effective and safe response to a radiological theft is a critical component of radiological security. RS works domestically with local law enforcement to provide resources, training, and tools that enable a more effective response to the potential theft of high-activity radioactive material. Internationally, RS works in close cooperation with radioactive material users and national, regional, and multilateral partners, including the IAEA and INTERPOL. RS implements state-of-the-art security solutions to protect radioactive material at volunteer sites, including implementing mobile source transit security systems for sources used in the well logging and radiography industries.

Highlights of the FY 2025 Budget Request

- Promote and facilitate the transition from high-activity radioactive sources to non-radioisotopic alternative technologies through (1) the replacement of 90 devices (70 domestically and 20 internationally), and (2) developing, promoting, and

incentivizing the use of alternatives to cobalt-60 for cancer treatment, insect irradiation, and food irradiation internationally.
- Remove an additional 600 unwanted sealed sources (500 domestically and 100 internationally) for disposition or long-term storage.
- Enhance capabilities to manage disused sources safely and securely and build international partner capacity to manage disused sources themselves.
- Fabricate a mobile hot cell for high-activity disused source removals domestically and internationally.
- Protect an additional 20 buildings (15 domestically and 5 internationally) with high-priority radioactive sources.
- Conduct 15 exercises with domestic law enforcement and USG Interagency partners.
- Increase access to non-radioisotopic alternatives to help meet the growing global demand for irradiation of food, wastewater purification, medical product sterilization, and advanced cancer treatment while eliminating the security risk of using high-activity radioactive sources for these purposes.
- Maintain and expand partnerships with U.S. industry to identify new security solutions to address risks and increase security of radioactive materials.
- Enhance security of radioactive sources during transit in the United States and internationally by deploying Transport Security Tracking and Reporting (T-STAR) systems.

FY 2023 Accomplishments
- Provided equipment, training, and technical assistance to partners in Ukraine to secure and monitor 36 facilities housing high-activity radioactive sources. Removed five disused sources from medical facilities to secure storage facilities in Ukraine.
- Replaced 97 devices (78 domestically and 19 internationally) that use high-activity radioactive sources with non-radioisotopic alternative technologies and expanded education and outreach to encourage broader adoption of technologies that do not use high-activity radioactive sources.
- Recovered and disposed of over 670 excess and unwanted sealed sources from locations throughout the United States. and over 3,500 disused or unwanted radioactive sources in other countries.
- Secured a total of 20 buildings (14 domestic and six international) with high-priority radioactive sources.
- Through the RadSecure 100 Initiative, expanded response training and coordination efforts with local law enforcement in additional metropolitan areas across the United States.
- Engaged with law enforcement in 11 cities and 14 state agencies domestically and two international partners.
- Completed 23 exercises with domestic law enforcement and USG interagency partners.
- Increased coordination between sites that have high-priority radioactive material and local law enforcement agencies responsible for protecting those sites, such as developing and deploying a new mobile, cloud-based application called Sentry-SECURE, that provides greater situational awareness.
- Collaborated with U.S. industry on Security-by-Design to make source-based devices and facilities inherently more secure in the manufacturing process.
- Expanded in-device delay installations at gamma knife facilities internationally.
- Worked with partners to sustain previously installed security upgrades in the United States and around the world.
- Installed the first units of T-STAR on three domestic transportation conveyances and deployed to two international partner countries.

Radiological Security
Funding ($K)

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Radiological Security $260,000,000 • Replaced 97 devices (78 domestically and 19 internationally) that use high-activity radioactive sources with non-radioisotopic alternative technologies. • Removed more than 4,170 (670 domestically and over 3500 internationally) unwanted sealed sources for disposition or long-term storage. • Protected an additional 20 buildings (14 domestically and six internationally) with high activity radioactive sources. • Through the RadSecure 100 Initiative, expanded response training and coordination efforts with local law enforcement in additional metropolitan areas across the United States. • Supported the secure and peaceful use of advanced nuclear technologies by facilitating access to non-radioisotopic alternative technologies which can be achieved through device installation, infrastructure improvements, outreach, and education. • Worked with industry, regulators, and operators to enhance security of high-activity radioactive sources during transportation. • Maintained focus on cybersecurity, insider threat mitigation, and security culture in the United States and abroad, providing partners with training and other technical assistance to keep radioactive materials secure.	**Radiological Security $260,000,000** • Promote and facilitate the transition from high-activity radioactive sources to non-radioisotopic alternative technologies through (1) replacement of 90 devices (70 domestically and 20 internationally), and (2) developing, promoting, and incentivizing the use of alternatives to cobalt-60 internationally for cancer treatment, insect irradiation, and food irradiation. • Remove 600 unwanted sealed sources (500 domestically and 100 internationally) for disposition or long-term storage. • Enhance capabilities to manage disused sources safely and securely and build international partner capacity to manage disused sources themselves. • Fabricate a mobile hot cell for high activity source removals. • Protect an additional 20 buildings (15 domestically and five internationally) with high-priority radioactive sources. • Conduct 15 exercises with domestic law enforcement and USG Interagency partners. • Maintain and expand partnerships with U.S. industry to identify new security solutions Enhance security of radioactive sources during transport by deploying Transport Security Tracking and Reporting (T-STAR) systems.	**Radiological Security $0** • No change.

Global Material Security
Nuclear Smuggling Detection and Deterrence

Description

The Nuclear Smuggling Detection and Deterrence (NSDD) subprogram works to build global capacity to detect, disrupt, and investigate the smuggling of nuclear and radioactive material before it can be used in an act of terrorism. NSDD provides partners with tailored radiation detection systems based on assessments of high-risk smuggling pathways and operational environments. NSDD partners include law enforcement, intelligence, and border security organizations. To facilitate long-term system operability, NSDD works with partners to develop their capabilities across five performance areas: policies and procedures, operations, training, maintenance, and assessment. NSDD coordinates closely with other U.S. Government agencies (e.g., Departments of Homeland Security, State, Defense, and Justice) to maximize the impact of U.S. Government resources, and collaborates with international organizations such as INTERPOL, the IAEA, the Border Monitoring Working Group, United Nations Office of Drugs and Crime, and the WCO to promote consistency and act as a force multiplier in global efforts to counter nuclear smuggling. Through all these engagements, NSDD works to advance U.S. leadership on countering nuclear smuggling, support deployment and sustainment of trusted, capable detection systems, and develop trusting, long-standing partnerships that advance U.S. national security as well as global security.

NSDD addresses gaps in global counter nuclear smuggling capabilities by expanding program initiatives and partnerships to address the evolving geopolitical landscape and emergence of new global threats. NSDD cooperates with partners to establish and sustain a defense-in-depth detection strategy at:

- High-priority points of entry, including land border crossings, rail crossings, airports, and seaports,
- Along frontier areas, working with border and maritime security agencies at green and blue borders, and
- Within the interior of states, partnering with law enforcement and security services.

NSDD works with partners to build necessary capabilities in a manner commensurate with partners' existing security practices. These collaborations are also designed to enhance the partner's nuclear forensics and investigation support capabilities to include capacity-building focused on isotopic identification and analysis of detected material. Together, these tools contribute to building a practical, comprehensive, and effective counter nuclear smuggling system.

Highlights of the FY 2025 Budget Request

- Equip priority points of entry with radiation detection systems and provide associated training and maintenance support to help counter the threat of illicit trafficking of nuclear and radioactive material; Central Asia, Eastern Europe, Africa, and South and Southeast Asia are priority regions.
- Strengthen radiation detection and interdiction capabilities in high-risk maritime and land frontier areas, including expanded engagements in Southeast and East Asia.
- Strengthen interdiction and inspection capabilities of Internal Security and Law Enforcement (ISLE) units making intelligence-driven decisions to patrol and protect internal checkpoints, major public events, and possible adversary targets of interest such as critical infrastructure.
- Build, sustain, and evaluate partner agencies' capabilities in five performance areas critical to achieving baseline counter nuclear smuggling operability: policies and procedures, operations, training, maintenance, and assessment.
- Enhance layered defenses in Eastern Europe to respond to the increased risk of nuclear smuggling following Russia's further invasion of Ukraine and resulting seizure of radioactive storage sites and nuclear facilities, and the loss of cooperation with Belarus.

FY 2023 Accomplishments

- Deployed additional equipment and associated training to border security, law enforcement, and emergency agencies across Ukraine to detect and deter illicit movement of materials and, in coordination with the Counterterrorism and Counterproliferation program, monitor for radiation release within Ukraine.
- Provided 51 counter nuclear smuggling systems to enhance the capabilities of law enforcement agencies; strengthened radiation detection and interdiction capabilities near high-risk border areas by completing four, and continuing work on

an additional four, Green Border Security Initiative (GBSI) projects; and provided seven systems at official points of entry to close key gaps in the global nuclear detection architecture.

- Provided radiation detection tools for interdiction of small maritime vessels in the Indian Ocean and the Arabian Sea.
- Established three new bilateral partner country engagements to strengthen nuclear investigation support capabilities, bringing the total number of current investigation support engagements to 37 partners.
- Conducted outreach engagements in over 30 countries in Africa, the Middle East, and South and Southeast Asia, and completed 8 new agreements with high-priority partners.
- Exceeded the FY 2023 target of 77% of partner agencies demonstrating operational capability of counter nuclear smuggling systems.
- Completed service life extensions at 150 sites across a total of 24 partner countries.
- Conducted 61 events, workshops, and exercises and 57 training courses to advance partner country capabilities in radiation detection operations and sustainability, equipment maintenance, and investigation support.

Nuclear Smuggling Detection and Deterrence
Funding ($K)

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Nuclear Smuggling Detection and Deterrence $185,000,000	**Nuclear Smuggling Detection and Deterrence $196,096,000**	**Nuclear Smuggling Detection and Deterrence +$11,096,000**
• Exceeded the FY 2023 target for 77% of partner agencies to demonstrate operational capability of counter nuclear smuggling systems. • Deployed counter nuclear smuggling systems at 62 interdiction points. • Completed a total of seven projects along points of entry, enhancing radiation detection capabilities at six large-scale border crossing points and one airport. • Enhanced frontier area interdiction capabilities by completing four GBSI projects. • Strengthened interdiction and investigation capabilities of internal security and law enforcement units, completing 51 projects providing radiation detection equipment, ancillary equipment, and training. • Supported capacity-building activities in policies and procedures, operations, training, maintenance, and assessment to promote system operability. • Conducted 61 drills, workshops, or exercises and completed 57 training courses to advance partner country capabilities in operating, maintaining, sustaining, and managing radiation detection measures, to include investigations. • Initiated new, high-priority engagements with law enforcement, intelligence, and border security agencies in the Sahel and Southeast Asia.	• Meet the FY 2025 target for 80% of partner agencies to demonstrate operational capability of counter nuclear smuggling systems. • Deploy counter nuclear smuggling systems at 39 interdiction points. • Complete a total of 15 projects along points of entry, enhancing radiation detection capabilities at: 12 large-scale border crossing points, two seaports, and one airport. • Enhance frontier area interdiction capabilities by completing five GBSI projects and one Maritime Vector Partnership project. • Strengthen interdiction and investigation capabilities of internal security and law enforcement units, completing 18 projects providing radiation detection equipment, ancillary equipment, and training. • Support capacity-building activities in policies and procedures, operations, training, maintenance, and assessment to promote system operability. • Conduct over 60 drills, workshops, or exercises and complete over 50 training courses to advance partner country capabilities in operating, maintaining, sustaining, and managing radiation detection measures, to include investigations. • Initiate new, high-priority engagements with law enforcement, intelligence, and border security agencies in the Sahel and Southeast Asia.	• Initiate four additional counter nuclear smuggling projects in the Philippines, Thailand, South Korea, and Taiwan and conduct additional outreach to prospective partners in Southeast Asia through multilateral organizations.

Nonproliferation and Arms Control

Overview

The Nonproliferation and Arms Control (NPAC) program enhances U.S. national security and facilitates legitimate civil nuclear cooperation by reducing global nuclear proliferation threats. The NPAC program applies its unique technical and policy expertise residing in Department of Energy, National Nuclear Security Administration (DOE/NNSA) to support U.S. nonproliferation and arms control objectives to prevent proliferation, support peaceful nuclear uses, and enable verifiable nuclear reductions. NPAC implements a broad range of regulatory and legislative responsibilities including, for example, Part 810 review, dual-use license/export control reviews, government assessments of the physical protection of U.S.-obligated nuclear materials at foreign facilities, and implementation of U.S.- International Atomic Energy Agency (IAEA) safeguards obligations at DOE facilities, including annual reporting requirements as required by U.S. law and treaty obligations.

The NPAC program pursues these objectives through four subprograms: (1) International Nuclear Safeguards; (2) Nuclear Export Controls; (3) Nuclear Verification; and (4) Nonproliferation Policy. Respectively, these offices: strengthen international nuclear safeguards; control the proliferation of nuclear material, equipment, technology, and expertise; verify nuclear reductions and compliance with nonproliferation and arms control treaties and agreements; and develop programs and strategies to anticipate and address nuclear nonproliferation and arms control challenges and opportunities. Across these programmatic functions, NPAC plays a leading role in addressing current threats while also drawing upon its expertise to anticipate emerging nonproliferation challenges and develop technical approaches and potential policy solutions.

Nonproliferation and Arms Control
Funding ($K)

Italics denotes reporting level	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
Nonproliferation and Arms Control	**230,656**	**230,656**	**224,980**	**-5,676**	**-2.5%**
International Nuclear Safeguards	*90,279*	*90,279*	*89,713*	*-566*	*-0.6%*
Nuclear Export Controls	*44,083*	*44,083*	*44,249*	*+166*	*+0.4%*
Nuclear Verification	*68,840*	*68,840*	*61,764*	*-7,076*	*-10.3%*
Nonproliferation Policy	*27,454*	*27,454*	*29,254*	*+1,800*	*+6.6%*
Total, Nonproliferation and Arms Control	**230,656**	**230,656**	**224,980**	**-5,676**	**-2.5%**

Nonproliferation and Arms Control
Outyear Funding ($K)

Italics denotes reporting level	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Nonproliferation and Arms Control	**222,870**	**224,483**	**239,193**	**243,029**
International Nuclear Safeguards	*83,910*	*84,518*	*90,056*	*91,500*
Nuclear Export Controls	*43,816*	*44,133*	*47,025*	*47,780*
Nuclear Verification	*66,125*	*66,604*	*70,968*	*72,106*
Nonproliferation Policy	*29,019*	*29,228*	*31,144*	*31,643*
Total, Nonproliferation and Arms Control	**222,870**	**224,483**	**239,193**	**243,029**

Nonproliferation and Arms Control
Explanation of Major Changes ($K)

	FY 2025 Request vs FY 2023 Enacted
Nonproliferation and Arms Control	
International Nuclear Safeguards: No major changes.	**-566**
Nuclear Export Controls: No major changes.	**166**
Nuclear Verification: The decrease reflects the use of above-request funding in FY 2023 for one-time investments to accelerate scope, with FY 2025 representing a sustainable schedule of nuclear verification training and exercises.	**-7,076**
Nonproliferation Policy: The increase includes additional funds to develop policy and technical solutions to address security and nonproliferation risks associated with the global expansion of nuclear energy to meet Net Zero goals.	**+1,800**
Total, Nonproliferation and Arms Control	**-5,676**

Nonproliferation and Arms Control
International Nuclear Safeguards

Description

The International Nuclear Safeguards (NS) subprogram strengthens the international nuclear safeguards regime and the IAEA's ability to verify peaceful uses of nuclear materials and facilities and detect non-compliance. NS manages programs to strengthen the technology and human capital base to support safeguards, oversees activities of the U.S. Support Program to IAEA Safeguards, collaborates with the IAEA and other partners to enhance the implementation of safeguards norms and best practices, promotes Safeguards by Design elements with the U.S. nuclear industry, oversees implementation of U.S. Additional Protocol (AP) and Voluntary Offer Agreement (VOA) safeguards requirements and activities at Department of Energy (DOE) sites and facilities, and assesses the physical protection of U.S.-obligated nuclear materials overseas. NS also provides support to the IAEA to implement its monitoring and verification mandate in Iran.

Highlights of the FY 2025 Budget Request

- Address identified safeguards challenges by transferring technologies to the IAEA, including new gamma-spectrometry software for material accounting, enhanced cyber security aspects for remote data acquisition and transfer systems, new methods for uranium enrichment measures, and particle reference materials for the IAEA's Network of Analytical Laboratories (NWAL).
- Implement ongoing DOE/NNSA statutory and treaty/agreement obligations and authorities, including physical security assessment visits for U.S.-obligated materials at foreign facilities; implementing U.S. safeguards obligations under the U.S. VOA/AP; and international safeguards training.
- Support effective IAEA safeguards and verification of Iran's nuclear program.
- Prepare and execute test-plan activities at the nonproliferation enrichment testing and training platform to develop and test technologies and approaches for transfer to the IAEA in collaboration with select international partners.
- Strengthen the U.S. safeguards technology and human capital base to meet projected resource requirements.
- Expand partnerships between national laboratories and advanced reactor stakeholders (designers, utilities, advocacy groups, non-governmental organizations (NGOs)) to incorporate international safeguards requirements into the next generation nuclear fleet (up to eight distinct partnerships in FY 2025).
- Provide customized training and outreach to more than 70 international partners to enable effective and efficient IAEA safeguards implementation around the world.
- Facilitate legitimate nuclear cooperation and minimize the proliferation risks of the expansion of civil nuclear power through capacity-building in nuclear safeguards.
- Enhance nonproliferation opportunities with over ten international partners through targeted peaceful uses engagement projects.

FY 2023 Accomplishments

- Refined implementation of safeguards obligations at DOE facilities through remote means.
- Implemented more than 50 domestic and international safeguards engagement workshops via remote/virtual and in-person delivery.
- Successfully conducted first field trial of wide-area environmental sampling as a proof-of-concept verification tool for consideration by the IAEA.
- Developed an innovative Fieldable Atomic Beam Isotopic Analyzer in partnership with DNN research and development (R&D) and Los Alamos National Laboratory that resulted in an R&D 100 Award.
- Implemented six partnerships between national laboratories and U.S. companies to promote international safeguards awareness and the incorporation of international safeguards requirements into designs for the next generation reactor fleet that U.S. companies hope to sell overseas.
- Promoted peaceful uses of nuclear technology globally, including through projects with U.S. nuclear medical societies to provide targeted peaceful uses assistance with Tanzania and Ghana, and across the Americas, and provided funding to the IAEA to facilitate over a dozen projects with partner countries.
- Transferred safeguards technologies to the IAEA, including the use of machine learning to improve inspector analysis of surveillance camera images and particle reference materials to enhance IAEA analytical laboratory capabilities.

International Nuclear Safeguards
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
International Nuclear Safeguards $90,279,000	**International Nuclear Safeguards $89,713,000**	**International Nuclear Safeguards -$566,000**
• Developed safeguards technologies and approaches to: (1) promote integration of features into advanced reactor designs to facilitate the application of IAEA safeguards; (2) improve efficiencies of safeguards; and (3) enhance inspector capabilities in high-priority areas such as enhanced in-field collection analysis and detection of undeclared activities. • Transferred safeguards tools to international partners or organizations to meet identified safeguards deficiencies. • Prepared the nonproliferation enrichment testing and training platform for commissioning in FY 2024 to develop and test technologies for transfer to the IAEA. • Improved safeguards concepts and approaches for new facilities and fuel cycles and analyze the implications of emerging technology to international safeguards applications. • Developed and promoted integration of Safeguards by Design elements into U.S. advanced reactor and fuel cycle facility designs to facilitate opportunities for international deployment. • Expanded and enhanced efforts to promote universal adherence to IAEA safeguards agreements and good practices in safeguards implementation by providing customized training and outreach to more than 70 countries.	• Develop safeguards technologies and approaches to: (1) promote integration of features into advanced reactor designs to facilitate the application of IAEA safeguards; (2) improve efficiencies of safeguards; and (3) enhance inspector capabilities in high-priority areas such as enhanced in-field collection analysis and detection of undeclared activities. • Transfer safeguards tools to the IAEA to address identified safeguards deficiencies. • Begin execution of test-plan activities at the nonproliferation enrichment testing and training platform • Improve safeguards concepts and approaches for new facilities and fuel cycles and analyze the implications of emerging technology to international safeguards applications. • Develop and promote integration of Safeguards by Design elements into U.S. advanced reactor and fuel cycle facility designs to facilitate opportunities for international deployment. • Expand and enhance efforts to promote universal adherence to IAEA safeguards agreements and good practices in safeguards implementation by providing customized training and outreach to more than 70 countries. • Expand non-power peaceful uses activities to other areas of the developing world to strengthen the NPT and further enhance	• No major changes.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
• Expanded non-power peaceful uses activities to other areas of the developing world to strengthen the Nuclear Nonproliferation Treaty (NPT) and further enhance safeguards implementation and regulatory effectiveness. • Maintained support for accredited IAEA NWAL at the U.S. national laboratories. • Maintained qualified and knowledgeable safeguards staff at the U.S. national laboratories and IAEA through early and mid-career safeguards positions at the U.S. national laboratories and safeguards training courses. • Cooperated with the Department of State, the Department of Defense, the Nuclear Regulatory Commission, and the IAEA to develop guidelines and policies to help prioritize the allocation of safeguards resources in ways that will strengthen the IAEA's ability to detect, deter, and investigate undeclared nuclear activities. • Provided as-requested technical and technology assistance to the IAEA to monitor Iran's nuclear program, and to prepare for possible involvement in denuclearization activities in Democratic People's Republic of Korea (DPRK). • Implemented U.S.-IAEA safeguards obligations at DOE facilities, including annual reporting requirements as required by U.S. law and treaty obligations. • Led U.S. Government assessments of the physical protection of U.S.-obligated nuclear materials at foreign facilities. • Implemented remote or virtual engagements when necessary and where practical and enhanced eLearning opportunities to expand outreach capabilities.	safeguards implementation and regulatory effectiveness. • Maintain support for accredited IAEA NWAL at the U.S. national laboratories. • Maintain qualified and knowledgeable safeguards staff at the U.S. national laboratories and IAEA through early and mid-career safeguards positions at the U.S. national laboratories and safeguards training courses. • Cooperate with the Department of State, the Department of Defense, the Nuclear Regulatory Commission, and the IAEA to develop guidelines and policies to help prioritize the allocation of safeguards resources in ways that will strengthen the IAEA's ability to detect, deter, and investigate undeclared nuclear activities. • Provide on an as-requested basis technical and technology assistance to the IAEA to monitor Iran's nuclear program, and to prepare for possible involvement in denuclearization activities in DPRK, as requested. • Implement U.S.-IAEA safeguards obligations at DOE facilities, including annual reporting requirements as required by U.S. law and treaty obligations. • Lead U.S. Government assessments of the physical protection of U.S.-obligated nuclear materials at foreign facilities.	

Nonproliferation and Arms Control
Nuclear Export Controls

Description

The Nuclear Export Controls subprogram has effectively migrated its technical and policy expertise to support the evolution of traditional export controls to the broader industrial policies of the U.S. Government (e.g., the CHIPS and Science Act). The subprogram implements and oversees programs that provide technical and end-user evaluations of U.S. export license applications, provide technical support that enhances the U.S. Government's capacity to detect and interdict illicit nuclear and dual-use commodity technology transfers to foreign programs of concern, provide technical support to the multilateral nonproliferation export control regimes, and strengthen foreign partner national systems of export control consistent with U.S. policy and the multilateral supplier regimes.

Highlights of the FY 2025 Budget Request

- Implement DOE/NNSA statutory obligations and authorities, including U.S. nonproliferation and export control activities (export license reviews and interdiction case technical reviews).
- Expand technical expertise capabilities at the DOE/NNSA national laboratories in crucial areas such as semiconductors, biotechnology, and hypersonics to support U.S. Government priorities to counter Russia and China, to implement the CHIPS and Science Act, and consider new mechanisms to strengthen traditional multilateral export control regimes.
- Contribute to the development of U.S. export control and other policies that protect the U.S. industrial base and counter rivals' effort to acquire U.S. goods and know-how for military or economic advantage.
- Facilitate legitimate nuclear cooperation and minimize the proliferation risks of the expansion of civil nuclear power through international capacity-building and engagement with over 35 international partners including new countries (Israel and Qatar) and expanded engagements (Southeast Asia) as determined by the office's risk prioritization methodology to strengthen export control systems through consultations, exercises, and training.
- Support interagency efforts to assess emerging and foundational technologies to prevent proliferation and establish effective unilateral and multi-lateral export controls.
- Counter illicit acquisition of weapons of mass destruction (WMD)-related dual-use goods by engaging over 35 countries to strengthen implementation of national strategic trade controls systems.
- Increase technical support to the multilateral regimes (Wassenaar) and other arrangements (Biological Weapons Convention).
- Execute the Export Compliance Assistance Program (ECAP) to raise awareness of export compliance responsibilities, assist in developing strategies for complying with all U.S. export control laws and regulations.

FY 2023 Accomplishments

- Delivered virtual seminars on six emerging technologies, focusing on implementation of Section 1758 of the Export Control Reform Act.
- Provided technical expertise to implement semiconductor controls at unilateral and multilateral levels, including crucial analysis for the Department of Commerce's October 7th rule and follow-on efforts to tighten controls to prevent the illicit acquisition of advanced U.S. technology, and support for the international trilateral arrangement to prevent advanced semiconductor technologies from bolstering adversaries' military and economic capabilities.
- Provided technical expertise to the U.S. delegations to the Wassenaar Arrangement, Australia Group, and the Missile Technology Control regime to strengthen existing guidelines and control lists and to protect key emerging and foundational technologies.
- Conducted more than 90 export control training and other types of events for U.S. enforcement agencies and international partners, while developing new training materials for use in FY 2023 and beyond.
- Supported more than 120 requests for technical analysis from U.S. enforcement community to assist in commodity identification and proliferation risk analysis of U.S. exports.
- Provided expertise to the U.S. export enforcement community that resulted in the identification of entities involved in Russian sanction evasion activities.
- Completed approximately 7,000 technical reviews of U.S. export licenses for nuclear and dual-use commodities and more than 2,000 technical analyses for interdiction cases and unique analytical products regarding proliferation trends.

Nuclear Export Controls
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Nuclear Export Controls $44,083,000	**Nuclear Export Controls $44,249,000**	**Nuclear Export Controls +$166,000**
• Engaged foreign partners on a bilateral and regional basis to strengthen their national export control systems to help prevent illicit trafficking in nuclear and WMD-related materials, commodities, and technology. • Trained U.S. export enforcement officials to familiarize them with controlled nuclear and dual-use material, equipment, and technology, which could be used for WMD purposes. • Performed technical reviews of U.S. export licenses for nuclear and dual-use commodities, performed reviews of nuclear software code requests and U.S. Munitions List cases. • Supported the U.S. Government enforcement community by providing technical analyses for interdiction cases and unique analytical products regarding proliferation trends. • Provided technical reviews of proposed transfers of items, materials, goods, and technology to Iran in accordance with applicable United Nations (UN) Security Council resolutions. • Supported ECAP which deploys export control awareness training and provides export compliance guidance and assistance across DOE and DOE/NNSA facilities targeted at the Federal workforce, their staff, and contractors. • Addressed potential proliferation risks associated with emerging and foundational technologies in cooperation with the U.S. interagency and international partners, as appropriate.	• Engage foreign partners on a bilateral and regional basis to strengthen their national export control systems to help prevent illicit transfers of nuclear and WMD-related materials, commodities, and technology. • Perform technical reviews of U.S. export licenses for nuclear and dual-use commodities, provide state-of-the-art technology assessments to the multilateral export control regimes on emerging and foundational technologies, review IAEA TC projects for proliferation concerns, and provide training courses for DOE and other U.S. Government officials regarding evolving export-controlled technologies and proliferation concerns. • Support the U.S. Government interdiction community by providing technical analyses for interdiction cases and unique analytical products regarding proliferation trends. • Maintain and support information technology systems to support export control licensing, interdiction analysis, and the multilateral nonproliferation export control regimes. • Support ECAP which deploys export control awareness training and provides export compliance guidance and assistance across DOE and DOE/NNSA facilities targeted at the Federal workforce, their staff, and contractors. • Address potential proliferation risks associated with emerging and foundational technologies.	• No major changes.

Nonproliferation and Arms Control
Nuclear Verification

Description

The Nuclear Verification subprogram enhances U.S. strategic stability by enabling verifiable nuclear and chemical arms limitations and reductions and supports the negotiation and implementation of U.S. nonproliferation and arms control treaties and agreements. The subprogram conducts applied technology development, testing, evaluation, maintenance, and deployment of monitoring technologies and develops monitoring and verification approaches informed through analysis of the potential impacts of initiatives on U.S. national laboratories, plants, and sites. The subprogram also executes NNSA's human capital development program focused on the next generation of arms control policy and technical experts. Additionally, the subprogram maintains technical readiness to negotiate and implement future nuclear fuel cycle transparency agreements and conduct U.S.-led missions to monitor, verify, disable, and dismantle proliferant nuclear weapons programs around the world. The subprogram performs monitoring and verification activities under existing agreements and supports U.S. Government review of other countries' compliance with their treaty and agreement obligations. The subprogram also contributes to U.S. policy development for treaty and agreement implementation while upholding U.S. requirements for maintaining a safe, secure, and reliable nuclear weapons stockpile.

Highlights of the FY 2025 Budget Request

- Execute Arms Control Advancement Initiative (ACAI) activities: 1) applied research and development of enhanced monitoring and verification (M&V) methods leading to new tool and technology development; 2) developing the documentation and use procedures for a user and test facility at the Pantex site; 3) launching a full suite of human capital development activities under the Next Generation Arms Control Experts program; and 4) increased technical cooperation with the United Kingdom (UK) and implementing potential new international technical partnerships.
- Establish an arms control user facility at the Pantex Plant to support DOE/NNSA's arms control monitoring and verification advanced capability development and evaluation and to strengthen personnel expertise and readiness in the deployment and use of these technologies to greatly complicate any efforts to circumvent monitoring regimes.
- Implement ongoing DOE/NNSA treaty and agreement obligations and authorities, including implementing DOE obligations under the Plutonium Production Reactor Agreement (PPRA), Chemical Weapons Convention (CWC), and the Nuclear Non-proliferation Treaty (NPT).
- Complete an exercise which adds nuclear warhead and dismantlement confirmation to the Baseline New Strategic Arms Reduction Treaty-informed Approach.
- Maintain U.S. monitoring and verification readiness and technical capabilities to support U.S.-led, on-site monitoring, denuclearization, and verification activities, including potential exercises with Australia, collaboration with Japan, and ongoing/planned exercises with the UK.

FY 2023 Accomplishments

- Successfully launched ACAI activities in FY 2023 including 1) applied R&D for M&V; 2) human capital development program; 3) planning for the classified user facility at Pantex; and 4) expanded activities with foreign partners.
- Implemented DOE/NNSA treaty and agreement obligations and authorities, including DOE obligations under the PPRA and the CWC.
- Supported multiple Administration-directed national security policy reviews, including for nuclear testing limitations and the Comprehensive Nuclear-Test-Ban Treaty (CTBT), future arms control policy, and the Nuclear Posture Review.
- Supported work to address the long-term technical challenges of nuclear disarmament verification.
- Maintained technical and manpower readiness for future U.S.-led monitoring and verification of denuclearization activities through strategic tool maintenance and regular verification team exercise and training events.
- Maintained a U.S. field verification capability to confirm whether a suspect event is an underground nuclear explosion, and if so, determine and assess key event parameters.

Nuclear Verification
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Nuclear Verification $68,840,000	**Nuclear Verification $61,764,000**	**Nuclear Verification -$7,076,000**
• Supported U.S. implementation, compliance analyses, and policy development for the New START Treaty, the CWC, and other arms control agreements, while protecting DOE/NNSA equities and interests. • Implemented U.S. and DOE/NNSA legal obligations under the CWC, including maintaining accreditation of the Organisation for the Prohibition of Chemical Weapons (OPCW) laboratory at Lawrence Livermore National Laboratory (LLNL). • Conducted national security and nuclear nonproliferation activities related to nuclear testing limitations, including those that support monitoring and verification capabilities under the CTBT International Monitoring System and International Data Centre that complement and strengthen U.S. nuclear explosion monitoring and verification capabilities. • Provided seismic monitoring capacity-building under the Seismic Cooperation Program to foreign partner institutions to enhance their abilities to detect and analyze possible nuclear explosions, as well as mitigate geophysical hazards. • Developed, tested, and evaluated verification procedures and technologies; trained and exercised specialized U.S. verification teams; and conducted operations planning to maintain short-notice readiness for U.S.-led monitoring and verification of nuclear weapons material	• Implement ACAI, a monitoring and verification initiative that bolsters the expertise and technology critical to sustaining DOE/NNSA's arms control mission and accelerate the development of new technologies and approaches. This will include establishment of an arms control research and evaluation user facility at the Pantex Plant. • Support U.S. implementation, compliance analyses, and policy development for the CWC, and other arms control agreements, while protecting DOE/NNSA equities and interests. • Implement U.S. and DOE/NNSA legal obligations under the CWC, including maintaining accreditation of the OPCW laboratory at LLNL. • Under the terms of the PPRA, if feasible, conduct up to three monitoring visits in Russia to ensure that Russian plutonium oxide is stored securely and that shutdown Russian plutonium production reactors remain in a non-operational status, and, if required, host Russian monitors on annual PPRA monitoring visit to shutdown U.S. plutonium production reactors at the Savannah River Site. • Conduct national security and nuclear nonproliferation activities related to nuclear testing limitations, including those that support monitoring and verification capabilities under the CTBT International Monitoring System and International Data Centre that complement and	• The decrease reflects the use of above-request funding in FY 2023 for one-time investments to accelerate scope, with FY 2025 representing a sustainable schedule of nuclear verification training and exercises.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
production programs and associated denuclearization efforts around the world. • Developed, tested, and evaluated warhead and weapons material monitoring and verification procedures and technologies, and supported international technical engagements to address long-term verification challenges. • Collaborated with the United Kingdom under the 1958 Mutual Defense Agreement (MDA) and with other partner countries to develop potential common approaches to nuclear verification issues. • Expanded training and eLearning where possible to maintain on-site verification readiness capabilities. • Initiated and implemented a monitoring and verification initiative that bolsters the expertise and technology critical to sustaining DOE/NNSA's arms control mission and accelerated the development of new technologies and approaches.	strengthen U.S. nuclear explosion monitoring and verification capabilities. • Provide seismic monitoring capacity-building foreign partner institutions to enhance their abilities to detect and analyze possible nuclear explosions, as well as mitigate geophysical hazards. • Develop, test, and evaluate verification procedures and technologies; train and exercise specialized U.S. verification teams; and conduct operations planning to maintain short-notice readiness for U.S.-led monitoring and verification of nuclear weapons material production programs and associated denuclearization efforts around the world. • Develop, test, and evaluate warhead and weapons material monitoring and verification procedures and technologies, and support international technical engagements to address long-term verification challenges. • Collaborate with the United Kingdom under the 1958 MDA and with other partner countries to develop potential common approaches to nuclear verification issues. • Conduct training and eLearning to maintain on-site verification readiness capabilities.	

Nonproliferation and Arms Control
Nonproliferation Policy

Description

The Nonproliferation Policy subprogram performs a longstanding statutory role in developing and implementing programmatic efforts that anticipate and address enduring and emerging nuclear nonproliferation challenges and opportunities. The subprogram serves as the DOE/NNSA lead in supporting the negotiation and implementation of nonproliferation agreements and requirements set forth in the Atomic Energy Act of 1954 (AEA), as amended; the 1978 Nuclear Nonproliferation Act; National Defense Authorization Acts (NDAAs); and other national nonproliferation initiatives, agreements, and treaties, including the NPT. In addition, the subprogram leads efforts to develop DOE/NNSA nonproliferation policy guidance on nuclear technology transfer and nuclear fuel cycle issues, undertakes activities to improve and update multilateral nuclear supplier arrangements, and identifies supplier vulnerabilities and potential gaps in supplier arrangements, including the Nuclear Suppliers Group (NSG). The subprogram also implements the regulations at 10 CFR Part 810 (Part 810), which control the export of unclassified nuclear technology and assistance, pursuant to Section 57b(2) of the AEA, as amended. Additionally, the subprogram supports activities focused preparing DOE/NNSA for cross-cutting and emerging changes to the global geopolitical threat environment.

Highlights of the FY 2025 Budget Request

- Provide critical technical expertise to complex 123 agreement renegotiations with Argentina and Brazil and negotiations with new 123 agreement partners as the need for new civil nuclear partners increases globally to combat climate change.
- Execute the Nonproliferation and Climate Change Program (NC2): 1) Collaborative research partnerships (national laboratories, NGOs, universities) that combine nonproliferation expertise and tools such as climate modeling; 2) international engagement to encourage nonproliferation considerations in forums such as the IAEA Atoms for Climate and IAEA Atoms for NetZero.
- Provide essential technical expertise to support the Nuclear Suppliers Group Technical Experts Group and the NPT RevCom to address challenges including changing multilateral norms and the impending spread of advanced reactors.
- Facilitate legitimate civil-nuclear commerce and minimize the proliferation risks of the expansion of civil nuclear power through international outreach.
- Provide nonproliferation assessments of emerging nuclear technologies and other emerging strategic risks and challenges.
- Completed important changes to Part 810, including increasing standards of review for exports to destinations where 123 agreements have expired and added civil penalties for U.S. industry to increase compliance.
- Implement legal authority to impose monetary civil penalties for violations of the Part 810 regulation.
- Assess fuel supply issues and options (back end of the fuel cycle) in conjunction with current proliferation and global political considerations.

FY 2023 Accomplishments

- Processed dozens of Part 810 specific authorization applications and requests for amendments, including end-use and technical reviews, and reviewed hundreds of reports and notifications for compliance with Part 810.
- Launched NC2, a first-of-its kind program, to develop policy solutions for security and nonproliferation risks associated with the global expansion of nuclear energy to meet Net Zero goals.
- Signed the Administrative Arrangement to the U.S.-United Arab Emirates 123 Agreement.
- Conducted multi-laboratory analyses of advanced reactor and related fuel cycle technologies to identify gaps created by these emerging technologies.
- Provided critical U.S. support and leadership in the NSG by supplying Technical Export Group (TEG) and Information Exchange meeting Chairs as well as the Assistants to the Consultative Group Chair and TEG.
- Provided foundational understanding of cross-cutting and emerging changes to the nonproliferation threat environment.
- Conducted Track 1.5 engagements in South Asia, East Asia, and the Middle East to reduce the danger of nuclear war and discourage the spread of nuclear weapons in critical regions.

Nonproliferation Policy
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Nonproliferation Policy $27,454,000	**Nonproliferation Policy $29,254,000**	**Nonproliferation Policy +$1,800,000**
• Supported the ongoing statutory responsibility for regulating the export of civil nuclear technology and assistance under 10 CFR Part 810. • Expanded enforcement and compliance efforts and implementation of new civil penalty authority rulemaking. • Supported implementation of U.S. deliverables for the 2026 NPT Review Cycle. • Conducted track 1.5 deterrence dialogue engagements to address NPT challenges. • Provided technical support to strengthen the international export control regimes. • Played a critical role on the development of policy initiatives and programming to ensure that the NSG Guidelines and control lists remain effective and credible. • Developed and executed a U.S. strategy for addressing advanced reactor technologies in the NSG. • Conducted targeted NSG industry outreach activities on technological and commercial developments of the NSG Guidelines. • Developed mechanisms to increase the number of 123 Agreements that balance U.S. nonproliferation norms and support U.S. industry while meeting future partners' desire to access U.S. technology.	• Support implementation of U.S. deliverables for the 2026 NPT Review Cycle and associated nonproliferation, disarmament, and peaceful uses objectives. • Execute NC2 activities: 1) Collaborative research partnerships (national laboratories, NGOs, universities) that combine nonproliferation expertise and tools such as climate modeling; 2) international engagement to encourage nonproliferation considerations in forums. • Conduct track 1.5 deterrence dialogue engagements in Europe and Asia to provide innovative solutions to NPT challenges. • Provide technical support to strengthen the international nuclear export control regimes and address emerging technologies such as advanced reactor and fusion technologies. • Play a critical role on the development of policy initiatives and programming to ensure that the NSG Guidelines and control lists remain effective and credible. • Provide ongoing U.S. support and maintenance of the NSG Information Sharing System (NISS) Web Application. • Fulfill statutory responsibility for regulating the export of civil nuclear technology and assistance under Part 810 by processing specific authorization applications and requests for amendments and renewals, including end-use and technical reviews.	• Develop policy and technical solutions to address security and nonproliferation risks associated with the global expansion of nuclear energy to meet Net Zero goals.

Defense Nuclear Nonproliferation Research and Development

Overview

The Defense Nuclear Nonproliferation Research and Development (DNN R&D) program directly contributes to nuclear security by developing U.S. capabilities to detect and characterize global nuclear security threats in full coordination with the goals and priorities of U.S. Government mission stakeholders across nonproliferation, counterterrorism, and emergency response mission areas. In addition, DNN R&D sustains and develops foundational nonproliferation technical competencies that ensure the technical agility needed to support a broad spectrum of U.S. nonproliferation missions and anticipate threats. To do these activities, DNN R&D leverages the unique facilities and scientific skills of the Department of Energy/National Nuclear Security Administration (DOE/NNSA), academia, and industry to perform research and demonstrate advances in capabilities, develop prototypes, and produce sensors for integration into operational systems.

Specifically, the DNN R&D program makes these strategic contributions through the innovation of U.S. technical capabilities to detect, identify, locate, and characterize foreign nuclear material production and weapons development activities, movement and illicit diversion of special nuclear materials, and global nuclear detonations. DNN R&D also supports arms control negotiations and verification, as well as other strategic stability efforts, emergency response, and nuclear forensics R&D to support time-critical decisions in the event of a nuclear or radiological incident or assist in determining the origin of interdicted materials or nuclear devices. These technical capabilities are either advanced to higher maturities, transitioned to stakeholders for further development for mission-specific applications, or transferred to operational performers. In addition, DNN R&D sustains and develops foundational nonproliferation technical capabilities by providing targeted, long-term support for enabling infrastructure, science and technology, and an expert workforce.

Defense Nuclear Nonproliferation Research and Development (DNN R&D)
Funding ($K)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
Defense Nuclear Nonproliferation R&D					
Proliferation Detection	**299,283**	**299,283**	**317,158**	**+17,875**	**+6.0%**
Nuclear Detonation Detection	**279,205**	**279,205**	**323,058**	**+43,853**	**+15.7%**
Nonproliferation Fuels Development	**20,000**	**20,000**	**0**	**-20,000**	**-100.0%**
Forensics R&D	**44,414**	**44,414**	**37,759**	**-6,655**	**-15.0%**
Nonproliferation Stewardship Program	**125,000**	**125,000**	**124,875**	**-125**	**-0.1%**
Total, Defense Nuclear Nonproliferation R&D	**767,902**	**767,902**	**802,850**	**+34,948**	**+4.6%**

Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR):

- **FY 2023 Enacted: SBIR:** $15,282 STTR: $0
- **FY 2024 Annualized CR: SBIR:** $15,282; STTR: $0
- **FY 2025 Request to OMB: SBIR:** $15,435; STTR: $0

Defense Nuclear Nonproliferation Research and Development (DNN R&D)
Outyear Funding ($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Defense Nuclear Nonproliferation R&D				
Proliferation Detection	**319,476**	**335,651**	**341,064**	**346,978**
Nuclear Detonation Detection	**330,952**	**336,076**	**341,255**	**348,085**
Nonproliferation Fuels Development	**0**	**0**	**0**	**0**
Forensics R&D	**40,460**	**40,818**	**41,675**	**42,877**
Nonproliferation Stewardship Program	**129,683**	**131,319**	**134,383**	**136,397**
Total, Defense Nuclear Nonproliferation R&D	**820,571**	**843,864**	**858,377**	**874,337**

Defense Nuclear Nonproliferation Research and Development
Explanation of Major Changes ($K)

	FY 2025 Request vs FY 2023 Enacted
Defense Nuclear Nonproliferation Research and Development	
Proliferation Detection (PD): Increase for Arms Control Advancement Initiative; and for remote sensing and artificial intelligence (AI) systems and tools in support of DNN R&D's Space Monitoring & Verification Program (Space MVP); offset by reduction made possible by FY 2023 above-request funding resulting in early completion of one-time equipment procurements.	**+17,875**
Nuclear Detonation Detection (NDD): Increase establishes space-based research, demonstration, and validation effort (Space MVP) and provides upgrades to low-yield nuclear monitoring testbed in preparation for next phase of experimentation.	**+43,853**
Nonproliferation Fuels Development: No funding is requested to continue this activity in FY 2025.	**-20,000**
Forensics R&D: Decrease allows for maintaining existing research life cycle plans.	**-6,655**
Nonproliferation Stewardship Program (NSP): No significant change.	**-125**
Total, Defense Nuclear Nonproliferation Research and Development	**+34,948**

Description

The Proliferation Detection (PD) subprogram develops technologies to detect foreign nuclear weapons programs, supports nuclear arms control treaty verification by improving compliance monitoring capabilities, and supports national nuclear security and interdiction of nuclear materials outside of regulatory control. Efforts are aligned along major functional areas: (1) Nuclear Weapons Development and Material Production Detection efforts targeted toward the detection, identification, location, and characterization of foreign nuclear weapons program activities; (2) Nuclear Weapons and Material Security efforts targeted toward nuclear security and nuclear arms control treaty monitoring and verification tools and applications, operational interdiction, radiological source replacement, and nuclear security efforts across DOE/NNSA; and (3) Nonproliferation Enabling Capabilities efforts supporting a broad R&D base to bring new, cross-cutting technologies to multi-use applications across NNSA and the interagency community, including a field experiment and demonstration program and university research program. The field demonstration program integrates research and experimental testbed activities to advance technology in support of the Nation's treaty verification and monitoring needs, including capabilities that support space-based monitoring and verification (Space MVP) by incubating remote sensing and data science activities to address emerging challenges in the space environment.

As part of DNN R&D's University Consortia for Nuclear Nonproliferation, the subprogram supports three consortia which link universities and DOE national laboratories to address basic research shortfalls in nuclear nonproliferation and security and treaty compliance monitoring. All currently funded consortia have a Minority Serving Institution (MSI) component and will place a particular emphasis on encouraging the participation of Historically Black Colleges and Universities (HBCU) and other MSIs through planned funding opportunity announcements (FOA).

Highlights of the FY 2025 Budget Request

- Advance U.S. detection and characterization capabilities of foreign nuclear weapons production activities through 2029.
- Demonstrate in U.S. capabilities in nuclear weapons and material security applications, including detecting special nuclear material (SNM) and its movement, incident response, and nuclear safeguards.
- Conduct programmatic activities for nonproliferation and foreign weapons program activity monitoring through execution and development of national testbeds for validation of new sensors, equipment, and capabilities.
- Provide a broad, underlying set of technical capabilities that support nuclear nonproliferation and nuclear security, continuing to expand current technical approaches.
- Extend remote sensing and data science research efforts to develop new capabilities for testing and validation within the Space MVP initiative.
- Align with the developing interagency requirements for early detection of nuclear proliferation, including cross-cutting artificial intelligence and other data science applications to meet the Nation's nuclear nonproliferation goals and improve our ability to detect, monitor, and characterize foreign nuclear weapons programs' activities.
- Award two new university-national laboratory consortia to address basic research shortfalls and provide a pipeline of next-generation nuclear science and engineering experts to the national laboratory system.
- Support the Counterterrorism and Counterproliferation program in addressing requirements under the Executive Order (EO 11410) on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence (AI) to support AI red-teaming.

FY 2023 Accomplishments

- Executed two field campaigns with interagency partners at joint Defense Threat Reduction Agency (DTRA)-DNN R&D nonproliferation testbed.
- Overcame significant distance-related radiation signal losses in demonstrating far-field optical detection.
- Initiated development of arms control-focused testbed (TREATI).
- Advanced multimodal foundation models to build, test, and validate AI to address emerging nuclear security missions.
- Demonstrated the Semi-Automated Scene Generation for Diagnostics to the San Francisco Federal Bureau of Investigation (FBI) stabilization team.

- Conducted collections at the Metropolis Plant Works uranium conversion facility in collaboration with other government agencies (OGAs) to evaluate effluents and their relationship to operations.
- Transitioned new radiation detection material to commercial partners in support of nuclear smuggling detection and deterrence.
- Deployed dynamic, persistent monitoring architecture capability with OGAs that integrated multi-modal sensor inputs and subject-matter expert (SME) knowledge.

Proliferation Detection
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Proliferation Detection $299,283,000	**Proliferation Detection $317,158,000**	**Proliferation Detection +$17,875,000**
• Developed and demonstrated advances in U.S. capabilities to detect and characterize foreign nuclear programs. • Developed and demonstrated advances in U.S. capabilities to strengthen nuclear security across the threat spectrum, including advanced detection and imaging for SNM detection, advanced safeguards technology, and nuclear data gaps in support of nuclear security. • Expanded efforts focusing on arms control and warhead verification and monitoring R&D and initiated activities to advance expected arms reduction technical frameworks and enable improved vulnerability assessments to expand U.S. technical options and flexibility in future negotiations. • Supported three university consortia to address basic gaps in nuclear nonproliferation and treaty compliance monitoring.	• Develop and demonstrate advances in U.S. capabilities to detect and characterize foreign nuclear programs, especially in denied areas, for SNM production detection, tritium production and use, technical breakout of foreign weapons programs, and new analytic approaches. • Develop, maintain, and upgrade national-level testbeds to provide operational environments that advance capabilities by exploiting nonproliferation signatures and validating end-to-end predictive capabilities for SNM production and weaponization activities. • Develop and demonstrate capabilities supporting nuclear security, including an integrated approach to broadened strategic arms control and verification R&D to identify key technologies considering emerging threats. • Support three university consortia to address basic gaps in nuclear nonproliferation and treaty compliance monitoring.	• **Proliferation Detection (PD):** Increase for Arms Control Advancement Initiative; and for remote sensing and AI systems and tools in support of Space MVP; offset by reduction made possible by FY 2023 above-request funding resulting in early completion of one-time equipment procurements.

Description

The Nuclear Detonation Detection (NDD) subprogram develops and builds space sensors for the Nation's operational nuclear test treaty monitoring and related capabilities, produces and updates the regional geophysical datasets and analytical understanding of waveform and radionuclide signatures to enable operation of the Nation's ground-based nuclear detonation monitoring networks, and supports activities to improve U.S. capabilities to detect and characterize low-yield and evasively conducted underground nuclear explosions. An initiative is to establish a new line of research, demonstration, and validation activities in support of space-based monitoring and verification (Space MVP) to support the Outer Space Treaty and address emerging challenges in the space environment with new investments in independent space-based verification technologies.

Highlights of the FY 2025 Budget Request

- Produce nuclear detonation detection satellite payloads in accordance with the negotiated schedule with the U.S. Space Force (USSF).
- Support the payload-side technical integration, pre-launch, and on-orbit testing activities for previously delivered payloads in accordance with host satellite schedules.
- Conduct research in seismic and radionuclide detection to support national capability in terrestrial and airborne monitoring and analysis methods.
- Align with Administration R&D priorities for nuclear security for early detection of nuclear proliferation by conducting low-yield explosion monitoring field experiments.
- Establish the Space MVP research, development, test, and evaluation activity to develop and validate sensors and systems to enable nuclear monitoring in and from space.

FY 2023 Accomplishments

- Launched latest Global Positioning System satellite with NDD's Global Burst Detector III-6 payload and conducted early on-orbit testing of the payload for meeting operational requirements for the U.S. Nuclear Detonation Detection System.
- Built and delivered to the USSF a suite of test assets that emulate the connections between the next-generation space-based payloads and their future Global Positioning System satellite host.
- Partnered with the National Aeronautical and Space Administration (NASA) in a demonstration – validation experiment to gain experience fielding new technology sensors in space on compressed timescales.
- Developed the Low-Yield Nuclear Monitoring (LYNM) testbed for future radioactive tracer and chemical high-explosive experiments to improve understanding of signatures associated with evasively conducted low-yield underground nuclear tests. Successfully executed the Release Activity (REACT) experiment at the testbed simulating the potential gaseous emissions of an underground nuclear test.
- Began geophysical site characterization and experimental design of the Source Physics Experiment III testbed to compare the seismic sources generated by chemical explosions and natural earthquakes.

Nuclear Detonation Detection
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Nuclear Detonation Detection $279,205,000	**Nuclear Detonation Detection $323,058,000**	**Nuclear Detonation Detection +$43,853,000**
• Fabricated Global Burst Detector (GBD) nuclear detonation detection payloads and tested assets for Global Positioning System (GPS) block IIIF satellites in accordance with the negotiated schedule with the USSF. • Supported payload-side technical integration, pre-launch, and on-orbit testing activities for previously delivered payloads. • Conducted required engineering development and satellite interface coordination to support payload design updates for future satellite blocks for GBDs and other U.S. NDD System payloads. • Improved capabilities of geophysical models, datasets, and analyses of seismic signals from underground detonations and improve technologies to detect radionuclide releases. • Significantly advanced capabilities designed to detect and characterize low-yield and evasively conducted underground nuclear explosions. • Developed Source Physics Experiment III to improve the capability to discriminate underground nuclear explosions from natural earthquakes.	• Develop, produce, and deliver sensor payloads hosted on GPS and geosynchronous space vehicles to fulfill requirements for the U.S. Nuclear Detonation Detection System (USNDS) mission, including fabrication and delivery of two GBD payloads for integration on GPS block IIIF satellites. Support payload-side technical integration, pre-launch, and on-orbit testing activities for previously delivered payloads. • Conduct required engineering development and satellite interface coordination to support payload design updates for future satellite blocks for GBDs and other USNDS payloads. • Advance nuclear detonation monitoring network capabilities of ground-based systems, including seismic, infrasound, hydroacoustic, and radionuclide signatures. • Prepare LYNM testbed for PE-1 shots B and DL to advance capabilities for global detection and characterization of low-yield or evasive nuclear testing. • Support Source Physics Experiment III, aiming to improve the capability to discriminate underground nuclear explosions from natural earthquakes.	• Increase establishes space-based research, demonstration, and validation effort (Space MVP) and provides upgrades to low-yield nuclear monitoring testbed in preparation for next phase of experimentation.

Defense Nuclear Nonproliferation Research and Development
Forensics R&D

Description

The Forensics R&D subprogram supports developing and advancing technical nuclear forensics analysis capabilities at the DOE/NNSA national laboratories that can support time-critical decisions in the event of a nuclear or radiological incident and assist in determining the origin of interdicted materials or nuclear devices. The subprogram's R&D includes the collection, analysis, and evaluation of pre-detonation and post-detonation nuclear and other radioactive materials, devices, and debris, as well as the immediate effects created by a nuclear detonation. It also sustains subject matter expertise to support exercises, mentoring, training, expert reach-back, and real-world contingency operations.

As part of DNN R&D's University Consortia for Nuclear Nonproliferation, the subprogram supports one consortium which links universities and DOE national laboratories to address basic research shortfalls in science, engineering, and other disciplines relevant to NNSA's technical nuclear forensics missions. All currently funded consortia have a MSI component and will place a particular emphasis on encouraging the participation of HBCU and other MSIs through planned FOA.

Highlights of the FY 2025 Budget Request

- Develop advanced technical nuclear forensics analysis capabilities that support U.S. Government response to a nuclear or radiological event.
- Support the nuclear forensics R&D university consortium, as part of DNN R&D's University Consortia for Nuclear Nonproliferation, to address basic research shortfalls and provide a pipeline of next-generation nuclear forensics experts to the national laboratory system.

FY 2023 Accomplishments

- Advanced diagnostic signature study of material irradiation history to aid nuclear forensics analysis.
- Identified new signatures of diagnostic methods that inform process history by combining modeling, advanced analytical techniques, and empirical observation.
- Awarded the new five-year $25 million nuclear forensics R&D university consortium.

Forensics R&D
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Forensics R&D $44,414,000	**Forensics R&D $37,759,000**	**Forensics R&D -$6,655,000**
• Improved technical nuclear forensic capabilities, including the technical means to assess bulk samples of SNM and the technical preparedness for scenarios of surface-interacting nuclear detonations. • Addressed interagency validated research priorities under National Security Presidential Memoranda (NSPM)-35 that support the technical capability of operational assets and verification and validation activities. • Improved the process to generate actionable information from laboratory measurements, modeling efforts, and expert evaluations in the analysis of fallout debris samples following a nuclear detonation. • Reduced timelines and uncertainties in priority measurements. • Informed future capability requirements by assessing the benefits of incorporating emerging technical methods during operational exercises, baseline assessments, and other targets of opportunity. • Supported a nuclear forensics R&D university-lab research consortium to address basic research shortfalls and provide a pipeline of next generation of experts needed to support NNSA's technical nuclear forensics missions.	• Develop and maintain advanced technical nuclear forensics analysis capabilities at the national laboratories. • Execute nuclear forensics R&D university-lab research consortium to address basic research shortfalls and provide a pipeline of next-generation nuclear forensics experts to the national laboratories.	• Decrease allows for maintaining existing research life-cycle plans.

Description

The Nonproliferation Stewardship Program (NSP) subprogram sustains and maintains critical nonproliferation foundational technical competencies at DOE/NNSA national laboratories. The NSP recognizes that the U.S. nuclear weapons program and domestic nuclear fuel cycle infrastructure has significantly narrowed or declined since the Cold War era, leaving the Nation without the large cadre of DOE/NNSA national laboratory personnel with hands-on experience in sensitive fuel-cycle processes, material handling, and nuclear weapons development and testing. At the same time, advances in manufacturing, computing, and other key areas, combined with easier access to nuclear-related information, are creating more diverse pathways to developing a nuclear weapon and have reduced and evolved the footprint and associated signatures of those activities. The convergence of these trends coupled with the continued threat of covert proliferation is making the task of nuclear nonproliferation more complex. To ensure the technical agility needed to support nonproliferation missions and anticipate threats, the NSP sustains and develops foundational nonproliferation technical competencies by providing targeted, long-term support for enabling infrastructure, S&T, and an expert workforce.

Highlights of the FY 2025 Budget Request

- Support experimental capabilities and testbed development needed to address immediate capability shortfalls in support of nonproliferation missions, especially in uranium enrichment, conversion, and plutonium sciences.
- Support additional targeted, long-term activities to ensure the Nation is prepared to meet future nonproliferation goals and anticipate threats through relevant S&T, testbeds and research environments, and modern expertise, including weaponization and tritium.
- Execute Phase II of build-back of laboratory space and procure equipment as part of the Uranium Sciences and Technology Center, which establishes a modern laboratory environment to develop technical expertise.
- Initiate uranium conversion and weaponization knowledge preservation and transfer activities to capture overall weaponization process understanding before the permanent loss of critical expertise.

FY 2023 Accomplishments

- Validated recently developed uranium enrichment modeling and simulation capabilities against current interagency partners' requirements resulting in requests for accelerated transition of these products in FY 2024.
- Initiated plutonium purification, refining, recovery, and recycling process activities to accelerate workforce development with skills in molecular chemistry, material science, and aqueous systems associated with nuclear weaponization activities.
- Completed the FY 2023-2027 quadrennial cycle competency assessments, with participation from 15 federal partners and 14 DOE/NNSA national laboratories to re-baseline foundational competencies sufficiency and create the FY 2023-2027 Stewardship Strategic Implementation Plan.
- Finalized phase I facility upgrades and initiated phase II design and demolition activities for a Uranium Science and Technology Center that will deliver state-of-the-art uranium conversion pre- and post-enrichment laboratories by FY 2026.
- Manufactured and installed 17 advanced test articles supporting a nonproliferation testbed modernization strategy and advancing DOE/NNSA and broader U.S. Government sensing and characterization technology development.
- Mobilized and initiated mining activities on a new underground testbed addressing emerging national security requirements, including completing core sampling, analysis, and phase 1 design, in preparation for mission equipment and operations.
- Developed a ten-year modernization strategy for Pacific Northwest National Laboratories' (PNNL) Radiochemical Processing Laboratory, in accordance with the NNSA-DOE memorandum of agreement, to meet current and future combined mission needs in tritium, actinide material science, technical forensics, and material purification.
- Added 195 laboratory researchers to NNSA's capacity to execute research and development, foreign activity assessments, and partnership opportunities with international organizations.

Nonproliferation Stewardship Program
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Nonproliferation Stewardship Program **$125,000,000**	**Nonproliferation Stewardship Program** **$124,875,000**	**Nonproliferation Stewardship Program** **-$125,000**
• Supported testbed development addressing immediate capability shortfalls in support of nonproliferation missions. • Supported infrastructure upgrades and hardware initiatives to create a comprehensive, physics-based computational model that can predict the output of an entire uranium enrichment system based on the specific design of a single machine. • Supported additional targeted, long-term activities building foundational technical competencies needed for high-priority nonproliferation applications, including in weaponization, by developing testbeds and research environments, conducting relevant S&T, and building modern expertise. • Conducted annual reviews evaluating progress toward building foundational nonproliferation technical competencies.	• Establish test and evaluation laboratories critical to nonproliferation technical capabilities, including the fabrication and manufacture of machines. • Support long-term foundational technical competencies needed for highest-priority nonproliferation applications, including uranium, tritium, and plutonium sciences, and weaponization, by establishing pilot-scale material processing laboratories. • Advance enrichment S&T, including upgrades and hardware for predictive system-level modeling and simulation development and validation of predictive tools leveraging data science and artificial intelligence methods. • Complete the upgrade of a national security testbed essential to developing nonproliferation and counterproliferation tools. • Continue system-level efforts to establish a new underground testbed to develop capabilities and build workforce expertise in geosciences and underground facility operations.	• No significant changes.

DNN Research and Development
Capital Equipment Summary
($K)

	Total	Prior Years	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 vs FY 2023 ($)
Capital Equipment (> $500K)						
Total Non-MIE Capital Equipment (TEC <$10M)	N/A	N/A	79,871	91,741	90,238	+10,367
Tuolumne (formerly Unclassified El Capitan-like System (ATS-4)), LLNL[a]	15,000	0	3,000	3,000	3,000	+0
Total, Capital Equipment	**N/A**	**N/A**	**82,871**	**94,741**	**93,238**	**+10,367**

DNN Research and Development
Capital Equipment Summary
($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
Capital Equipment (> $500K)					
Total Non-MIE Capital Equipment (TEC <$10M)	93,126	95,082	97,078	99,117	N/A
Tuolumne (formerly Unclassified El Capitan-like System (ATS-4)), LLNL[a]	3,000	3,000	0	0	0
Total, Capital Equipment	**96,126**	**98,082**	**97,078**	**99,117**	**N/A**

[a] NNSA will utilize lease-to-purchase contracts (also referred to as lease-to-own (LTO)) for High Performance Computing procurements when such contracts are found to be in the best programmatic and financial value to the government. SRT&E and a LLNL overhead cost pool funds the remainder of costs for this MIE.

Nonproliferation Construction

Overview

The Nonproliferation Construction Program consolidates construction projects that directly contribute to reducing global nuclear security threats and is a key component of the Department of Energy (DOE), National Nuclear Security Administration's (DOE/NNSA) integrated nonproliferation, counterterrorism, and emergency response strategy.

DOE/NNSA pursues a dilute and dispose strategy to fulfill the U.S. commitment to dispose of material declared excess to defense needs, which includes NNSA's 34 metric tons (MT) of plutonium and some of the DOE Office of Environmental Management's 6 MT of plutonium. The dilute and dispose strategy consists of blending plutonium with an inert mixture, packaging it for safe storage and transport, and disposing of it in a geologic repository. The Surplus Plutonium Disposition (SPD) project will add additional glovebox capacity at the Savannah River Site (SRS) to accelerate plutonium dilution and aid in the removal of plutonium from the state of South Carolina. Additionally, a Pit Disassembly and Processing (PDP) capability will eventually be required to provide expanded pit disassembly, processing, characterization, and storage capabilities necessary to support the 34 MT mission.

Explanation of Major Changes
($K)

	FY 2025 Request vs FY 2023 Enacted
Nonproliferation Construction Projects	
U.S. Construction:	
18-D-150, Surplus Plutonium Disposition (SPD) Project: Reflects the use of prior year uncosted balances available due to delays in final design completion. Requested new funding is sufficient to support the plan to perform construction activities, receipt and inspection of long-lead equipment and materials, and manage the uncosted balances responsibly.	**-31,764**
Total, Nonproliferation Construction Projects	**-31,764**

Nonproliferation Construction
U.S. Construction

Description

The Nonproliferation Construction program pursues the dilute and dispose strategy to fulfill the U.S. commitment to dispose of 34 MT of plutonium. The dilute and dispose strategy consists of blending plutonium with an inert mixture, packaging it for safe storage and transport, and disposing of it in a geologic repository. The SPD project will add additional glovebox capacity at the SRS to increase plutonium dilution throughput and aid in the removal of plutonium from the state of South Carolina.

NNSA achieved Critical Decision 0 (CD) for the PDP Project and NNSA initiated an Analysis of Alternatives (AoA) in September 2021 to evaluate options to expand PDP to address the capability gap. The AoA was completed in October 2022 and considered multiple locations across the DOE complex to site the project including Los Alamos National Laboratory (LANL) and SRS. The AoA found that all alternatives have significant risk of impact from and on active construction projects at LANL and SRS. Additionally, the NNSA Nuclear Security Enterprise is at the limit of its capacity to execute major construction projects, and commercial glovebox producers are already oversaturated with ongoing pit production projects. NNSA has decided to revisit the timing of the PDP capital line-item project and to initiate it in approximately ten years (early/mid 2030s), with a formal review in five years. This aligns with the planned completion of pit production facilities at LANL and SRS. There is no funding requested in this budget for PDP.

Other Project Cost (OPC)

This activity supports all other costs related to a project that are not included in the total estimated cost (TEC). OPCs include, but are not limited to research and development, conceptual design and conceptual design report, cold start-up and commissioning costs, National Environmental Policy Act (NEPA) documentation, project data sheet preparation, siting, and permitting requirements. These costs are part of the approved baseline and the total project cost (TPC) of the project.

Total Estimated Costs (TEC)

This activity supports the design, long-lead equipment procurement, site preparation, and construction of the project.

Highlights of the FY 2025 Budget Request

- Support balance of SPD construction work that will be in progress such as: second floor dowel installation; various commodity installations and dismantle and remove (D&R); concrete reinforcement, form work, & pouring.
- Begin development of turnover and testing procedures.

FY 2023 Accomplishments

- Completed Final Design and Final Design Review.
- Completed fabrication of glovebox 1 of 3 as part of CD-3B Phase 2, Long Lead Equipment.
- Continued fabrication for the two remaining gloveboxes, forecast to complete in FY 2024.

U.S. Construction
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
U.S. Construction $71,764,000	**U.S. Construction $40,000,000**	**U.S. Construction -$31,764,000**
18-D-150, Surplus Plutonium Disposition (SPD) Project $71,764,000	**18-D-150, Surplus Plutonium Disposition (SPD) Project $40,000,000**	**18-D-150, Surplus Plutonium Disposition (SPD) Project -$31,764,000**
SPD OPC $5,000,000	**SPD OPC $5,933,000**	**SPD OPC +$933,000**
• Supported activities such as project management and project controls support, procurement support, design authority activities, operations and security support, and start-up planning.	• Support activities such as project management and project controls support, procurement support, design authority activities, operations and security support, and start-up planning.	• Increase is due to the continued delays experienced in Final Design changing when the support for the ramp-up for project management and project controls support, procurement support, design authority activities, operations and security support, and start-up planning is needed.
SPD TEC $66,764,000	**SPD TEC $34,067,000**	**SPD TEC -$32,697,000**
• Completed the fabrication, receipt, inspection, and acceptance of long-lead procurements. • Completed final design for CD-2/3.	• Begin development of turnover and testing procedures. • Install second floor dowel. • Install various commodities.	• Reduction reflects the use of available prior year uncosted balances to support the full FY 2025 requirement.

18-D-150 Surplus Plutonium Disposition (SPD)
Savannah River Site, Aiken, South Carolina
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary: The FY 2025 Request for the Surplus Plutonium Disposition (SPD) project is $40,000,000. The high end of the cost range approved at Critical Decision (CD)-1 is $620,092,000. A Federal Project Director Level III has been assigned to this project and has approved this Construction Project Data Sheet (CPDS). Funding for this project is controlled at the Total Project Cost (TPC) level. Appropriations may be used for design, construction, or other project costs (OPC).

Significant Changes[a]
DOE/NNSA initiated this project in FY 2018. The most recent DOE-approved CD for the project is CD-3C Phase 3, Additional Early Site Preparations, which was approved on August 23, 2022.

In FY 2023, the project:

- Contactor submitted the Final Design and Final Design Report to NNSA for review & acceptance of Final Design Complete milestone.
- Completed fabrication of glovebox 1 of 3 as part of CD-3B Phase 2, Long Lead Equipment; fabrication is near complete for the two remaining gloveboxes and the diesel generator fabrication continued to progress.
- Continued progressing concrete Dismantle and Remove (D&R) and temporary construction office space as part of CD-3C Phase 3, Additional Early Site Preparation.
- Continued progress towards EVMS Certification and completion of an Independent Cost Estimate (ICE) and an External Independent Review (EIR) for CD-2/3.

In the second quarter of FY 2023, a DOE/NNSA team conducted a Technical Independent Project Review (TIPR) follow-up review on the progression from the FY 2022 TIPR which identified that the project needed additional design efforts to validate the safety-related Fire Protection System (FPS) and the Active Confinement Ventilation System. The review determined the project has made significant progress (producing or strengthening many design, safety, and supporting documents) to address the issues identified in the FY 2022 TIPR. However, there were additional changes necessary to strengthen the approach to the safety-related FPS and Safety Design Strategy (SDS). The project incorporated the required changes to strengthen the FPS and SDS from the TIPR follow-up review impacting the Final Design Milestone from 3Q to 1Q FY 2024. NNSA approved “final design complete” on December 14, 2023.

In the third quarter of FY 2023, the contractor proposed opportunities for accelerating the CD-4 milestone date by performing additional site preparations to the existing facility and procuring material with long lead times. The contractor concurrently provided CD-3D Phase 4, Final Site Preparation, and CD-3E Phase 5, Additional Long Lead Procurements, packages for NNSA approval. The CD-3D Phase 4, Final Site Preparation, was not approved as packaged and the scope was moved back into the CD-2/3 balance of construction submittal. The CD-3E Phase 5, Additional Long Lead Procurements, will procure materials necessary for the first 6 months of construction and materials with a lead time greater than 20 weeks due to nationwide supply chain issues. The CD-3E Phase 5 package was approved on December 6, 2023.

The FY 2024 CPDS reflected an increase to the total project cost of $155 million which correspondingly increases the high-end of the cost range to $775 million and extends the CD-4 completion date to 4Q FY 2030. The TPC and funding profile will be formally established when the project is baselined at CD-2/3 per DOE O 413.3B which is forecasted for approval in 4Q FY 2024. Funding changes are reflected in the Financial Schedule (Section 3), Details of Project Cost Estimate (Section 4), and Schedule of Appropriation Request (Section 5).

[a] Funding and schedules shown throughout the CPDS are estimates and consistent with the revised risk-informed plan and will be updated upon approval of the validated CD-2/3 baseline.

Additionally in FY 2024, the project will:

- Receive all the gloveboxes and the Diesel Generator from the CD-3B Phase 2, Long Lead Equipment, scope.
- Complete the field work for the CD-3C Phase 3, Additional Early Site Preparation, scope.
- Obtain Earned Value Management System (EVMS) certification.
- Approve nuclear safety and criticality documentation and submit to Safety Basis Approval Authority.
- Complete environmental documents and permits, and fire protection documents.
- Complete an EIR and ICE necessary for establishing the Performance Measurement Baseline (PMB).
- Obtain approval from the Safety Basis Approval Authority for the nuclear safety and criticality documentation.

In FY 2025, the project will:

- Continue construction of the reinforced concrete interior walls and second floor.
- Continue construction of the High Efficiency Particulate Air (HEPA) building foundation and structure.
- Continue procurements for CD-3E Phase 5, Additional Long Lead Procurements.

The funding profile for future years will be updated when the estimates are validated, and a baseline has been approved as part of the CD-2/3 process.

Critical Milestone History

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2018	10/31/1997	2/2/2017	3Q FY 2018	1Q FY 2022	4Q FY 2021	1Q FY 2022	N/A	4Q FY 2027
FY 2019	10/31/1997	2/2/2017	4Q FY 2018	4Q FY 2022	4Q FY 2021	4Q FY 2022	N/A	4Q FY 2027
FY 2020	10/31/1997	2/2/2017	1Q FY 2020	4Q FY 2022	4Q FY 2021	4Q FY 2022	N/A	4Q FY 2028
FY 2021	10/31/1997	9/30/2019	12/19/2019	4Q FY 2022	4Q FY 2021	4Q FY 2022	N/A	2Q FY 2028
FY 2022	10/31/1997	9/30/2019	12/19/2019	4Q FY 2022	2Q FY 2022	4Q FY 2022	N/A	2Q FY 2028
FY 2023	10/31/1997	9/30/2019	12/19/2019	4Q FY 2023	2Q FY 2023	4Q FY 2023	N/A	2Q FY 2028
FY 2024	10/31/1997	9/30/2019	12/19/2019	3Q FY 2024	3Q FY 2023	3Q FY 2024	N/A	4Q FY 2030
FY 2025	10/31/1997	9/30/2019	12/19/2019	4Q FY 2024	12/14/2023	4Q FY 2024	N/A	4Q FY 2030

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range
Conceptual Design Complete – Actual date the conceptual design was completed (if applicable)
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
Final Design Complete – Estimated/Actual date the project design will be/was complete (d)
CD-3 – Approve Start of Construction
D&D Complete – Completion of D&D work
CD-4 – Approve Start of Operations or Project Closeout

Fiscal Quarter or Date

Fiscal Year	Performance Baseline Validation	CD-3A Phase 1	CD-3B Phase 2	CD-3C Phase 3	CD-3E Phase 5
FY 2018	1Q FY 2022	1Q FY 2020	N/A	N/A	N/A
FY 2019	4Q FY 2022	4Q FY 2019	N/A	N/A	N/A
FY 2020	4Q FY 2022	2Q FY 2020	N/A	N/A	N/A
FY 2021	4Q FY 2022	2Q FY 2020	N/A	N/A	N/A
FY 2022	4Q FY 2022	2/13/2020	N/A	N/A	N/A
FY 2023	4Q FY 2023	2/13/2020	12/21/2020	4Q FY 2022	N/A
FY 2024	3Q FY 2024	2/13/2020	12/21/2020	8/23/2022	N/A
FY 2025	4Q FY 2024	2/13/2020	12/21/2020	8/23/2022	12/06/2023

CD-3A Phase 1 – Early Site Preparations
CD-3B Phase 2 – Long Lead Procurements
CD-3C Phase 3 – Additional Early Site Preparations
CD-3E Phase 5 – Additional Long Lead Procurements

Project Cost History

Fiscal Quarter or Date

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2018	165,000	255,000	420,000	80,000	N/A	80,000	500,000
FY 2019	154,820	261,780	416,600	83,400	N/A	83,400	500,000
FY 2020	71,044	365,440	436,484	152,319	N/A	152,319	588,803
FY 2021	89,189	385,521	474,710	145,382	N/A	145,382	620,092
FY 2022	89,189	385,521	474,710	145,382	N/A	145,382	620,092
FY 2023	187,106	287,604	474,710	145,382	N/A	145,382	620,092
FY 2024	217,757	391,851	609,608	165,392	N/A	165,392	775,000
FY 2025	217,757	391,851	609,608	165,392	N/A	165,392	775,000

2. Project Scope and Justification

Scope

Approximately 15,000 ft^2 of processing space in the existing Hazard Category 2 K-Area Facility will be utilized for the project, which will expand the site's plutonium dilution capability. In addition, a 10,000 ft^2 support building will be located adjacent to the existing structure. To increase dilution throughput capacity, gloveboxes, equipment, and support systems (i.e., glovebox ventilation, fire suppression, glovebox rooms with airlocks, material control and accountability equipment, monitoring equipment, lag storage, etc.) will be installed in the existing K-Area Facility.

Justification

The mission of NNSA's Plutonium Disposition program is to remove plutonium from the state of South Carolina by providing processing, characterization, and storage capabilities to efficiently and permanently dispose of 34 metric tons of plutonium, thereby eliminating excess nuclear weapons materials.

It is a Departmental priority to remove specific inventories of plutonium from the state of South Carolina. Therefore, the removal of plutonium from Savannah River Site (SRS) for final disposition is a key objective of the program. Although the Dilute and Dispose strategy relies on mature technologies currently in use at DOE facilities, additional capacity is required to increase throughput to remove plutonium from SRS and meet NNSA's commitments to the state of South Carolina. This additional capacity will be provided by the SPD Project. The project includes new gloveboxes and associated process and

process support equipment, and security features for the diluted plutonium product pending its eventual characterization, packaging, and shipment for disposal.

In accordance with DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, an appropriate National Environment Policy Act (NEPA) review is required to support the project. DOE Order 413.3B requires final NEPA documentation prior to CD-2 for the project with a Record of Decision (ROD) after CD-2 approval, but prior to CD-3. In April 2015, DOE issued the *Surplus Plutonium Disposition Supplemental Environmental Impact Statement* (SPD SEIS, DOE/EIS-0283-S2). Although the SPD SEIS ROD does not contain a reference to the installation of any specific number of gloveboxes for the purpose of implementing the Dilute and Dispose strategy for the six metric tons (MT) of non-pit plutonium, the information contained in the *Savannah River Site and Los Alamos National Laboratory Timing and Throughput Assumptions Used for the Surplus Plutonium Disposition Supplemental EIS* (April 2015) indicates that installation and operation of three additional glovebox lines were analyzed as part of the development of the SPD Supplemental EIS. Because the installation of three additional glovebox lines for implementing the Dilute and Dispose strategy for the six metric tons (MT) of non-pit plutonium was previously analyzed and is consistent with the conceptual design for the SPD Project, no additional NEPA analyses or decisions are required to design, procure, and construct the SPD Project.
The SPD project is being conducted in accordance with the project management requirements in DOE O 413.3B, Program and Project Management for the Acquisition of Capital Assets and has met all appropriate project management requirements to date.

Key Performance Parameters (KPPs)

Performance Measure[a]	Threshold	Objective
Dilution throughput capacity	1.5 metric tons per year	N/A

[a] Key Performance Parameters will be finalized upon approval of the project baseline.

3. Financial Schedule

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2020	29,000	29,000	23,877
FY 2021	72,000	72,000	61,397
FY 2022	61,189	61,189	49,552
FY 2023	45,568	45,568	35,041
FY 2024	10,000	10,000	47,890
Total Design	**217,757**	**217,757**	**217,757**
Construction			
FY 2020	25,000	25,000	6,983
FY 2021	46,000	46,000	9,909
FY 2022	84,595	84,595	9,079
FY 2023	21,196	21,196	20,999
FY 2024	44,465	44,465	41,136
FY 2025	34,067	34,067	78,394
FY 2026	45,980	71,140	74,074
FY 2027	54,354	55,672	63,455
FY 2028	36,194	9,716	65,672
FY 2029			22,150
FY 2030			0
Total Construction	**391,851**	**391,851**	**391,851**
TEC			
FY 2020	54,000	54,000	30,860
FY 2021	118,000	118,000	71,306
FY 2022	145,784	145,784	58,631
FY 2023	66,764	66,764	56,040
FY 2024	54,465	54,465	89,026
FY 2025	34,067	34,067	78,394
FY 2026	45,980	71,140	74,074
FY 2027	54,354	55,672	63,455
FY 2028	36,194	9,716	65,672
FY 2029			22,150
FY 2030			0
Total TEC	**609,608**	**609,608**	**609,608**

($K)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2017	5,750	6,250	4,039
FY 2018	6,732	7,326	7,415
FY 2019	25,000	30,000	20,267
FY 2020[a]	25,000	24,596	21,241
FY 2021	30,589	29,419	13,238
FY 2022	10,216	11,383	10,669
FY 2023	5,000	4,894	14,776
FY 2024	22,746	22,746	5,012
FY 2025	5,933	7,873	8,242
FY 2026	5,000	5,000	10,234
FY 2027	5,000	5,000	11,005
FY 2028	5,346	5,346	12,963
FY 2029	13,080	5,559	12,500
FY 2030			13,791
Total, OPC	**165,392**	**165,392**	**165,392**
Total Project Costs (TPC)			
FY 2017	5,750	6,250	4,039
FY 2018	6,732	7,326	7,415
FY 2019	25,000	30,000	20,267
FY 2020	79,000	78,596	52,101
FY 2021	148,589	147,419	84,544
FY 2022	156,000	157,167	69,300
FY 2023	71,764	71,658	70,816
FY 2024[b]	77,211	77,211	94,038
FY 2025	40,000	41,940	86,636
FY 2026[c]	50,980	76,140	84,308
FY 2027[c]	59,354	60,672	74,460
FY 2028[c]	41,540	15,062	78,635
FY 2029[c]	13,080	5,559	34,650
FY 2030			13,791
Total TPC[d]	**775,000**	**775,000**	**775,000**

[a] FY 2020 actual costs have been corrected from the FY 2022 CPDS to reflect the correct split between design and construction actual costs.
[b] FY 2024 Budget Authority assumptions are based on the FY 2024 President's Budget Request.
[c] Includes funds for early procurement of engineered equipment.
[d] TPC increase to support anticipated future project growth.

4. Details of Project Cost Estimate

($K)

	Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	211,236	196,766	
Contingency	6,521	20,991	
Total Design	**217,757**	**217,757**	**N/A**
Construction			
Site Work	53,128	53,128	
Long Lead Equipment	79,996	25,329	
Equipment	21,737	21,737	
Other Construction	194,939	249,606	
Contingency	42,051	42,051	
Total Construction	**391,851**	**391,851**	**N/A**
Total Estimated Cost (TEC)	**609,608**	**609,608**	**N/A**
Contingency, TEC	*48,572*	*63,042*	*N/A*
Other Project Costs (OPC)			
OPC except D&D			
Conceptual Planning	2,340	2,340	
Conceptual Design	25,905	25,905	
NNSA Other Direct Costs	24,610	24,610	
Execution/Start-up Phase	16,139	16,139	
Startup and Training	28,111	28,111	
CD-3A Phase-Support	7,430	7,430	
CD-3A Phase Design OPC Support	6,452	6,452	
Preliminary / Final Design Phase OPC Support	43,659	43,659	
Contingency	10,746	10,746	
Total OPC	**165,392**	**165,392**	**N/A**
Contingency, OPC	*10,746*	*10,746*	*N/A*
Total Project Cost[a]	**775,000**	**775,000**	**N/A**
Total Contingency (TEC+OPC)	***59,318***	***73,788***	***N/A***

[a] TPC increase to support anticipated future project growth.

5. Schedule of Appropriations Requests

($K)

Request Year	Type	Prior Years	FY2022	FY2023	FY 2024	FY 2025	FY2026	FY2027	FY2028	FY2029	Total
FY 2019	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
	TPC	164,000	85,000	62,000	69,000	59,000	38,000	23,000	23,000	23,000	500,000
FY 2019	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
	TPC	191,750	74,750	62,000	60,000	59,000	35,000	17,500	17,500	17,500	500,000
FY 2020	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
	TPC	181,482	74,750	62,000	62,000	183,000	16,000	9,571	9,571	9,571	588,803
FY 2021	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
	TPC	265,071	115,705	101,779	101,192	36,345	0	0	0	0	620,092
FY 2022	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
	OPC	N/A	N/A	TBD	TBD	TBD	N/A	N/A	N/A	N/A	0
	TPC	265,071	156,000	TBD	TBD	TBD	199,021	0	0	0	620,092
FY 2023	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
	TPC	265,071	156,000	71,764	92,257	35,000	N/A	N/A	N/A	N/A	620,092
FY 2024[a]	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
	TPC	265,071	156,000	71,764	77,211	53,080	65,000	60,672	26,202	0	775,000
FY 2025[a]	TEC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
	TPC	265,071	156,000	71,764	77,211	40,000	50,980	59,354	41,540	13,080	775,000

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	1Q FY 2031
Expected Useful Life (number of years)	20 years
Expected Future Start of D&D of this capital asset (fiscal quarter)	1Q FY 2051

Related Funding Requirements
(Budget Authority in Millions of Dollars)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations and Maintenance	58.3	58.3	1,166	1,166

[a] TPC increase to support anticipated future project growth.

7. D&D Information

Approximately 15,000 ft^2 of processing space in the existing Hazard Category 2 K-Area Facility will be required for the project. In addition, a 10,000 ft^{-2} new support building will be located adjacent to the existing structure. The new square footage is reported below. The MOX-T demolished about 34 temporary buildings. At a minimum, these two buildings would offset the new area being constructed: 285-015F was 7,258 square feet and 717-045F was 8,540 square feet.

	Square Feet
New area being constructed by this project at Savannah River Site (K-Area).	10,000
Area of D&D in this project at Savannah River Site (K-Area).	N/A
Area at Savannah River Site (K-Area) to be transferred, sold, and/or D&D outside the project, including area previously "banked"	N/A
Area of D&D in this project at other sites	N/A
Area at other sites to be transferred, sold, and/or D&D outside the project, including area previously "banked"	15,798
Total area eliminated	N/A

8. Acquisition Approach

The acquisition strategy, which was developed as part of the CD-1 package, is with the M&O contractor for the design and construction of the SPD Project. The M&O contractor will employ other design and construction subcontractors as may be deemed of best value to the project.

Nuclear Counterterrorism and Incident Response Program

Overview

Among the Department of Energy/National Nuclear Security Administration's (DOE/NNSA) diverse nuclear security roles are the missions to counter nuclear terrorism, counter nuclear proliferation, and respond to nuclear emergencies worldwide. The Nuclear Counterterrorism and Incident Response (NCTIR) program not only ensures the Department's emergency preparedness and response posture but also harnesses the scientific knowledge of the U.S. national laboratories to assess nuclear and radiological threats and inform domestic and international policies, regulations, contingency planning, training, and capacity-building. These activities strengthen national and international counterterrorism, counterproliferation, and incident response capabilities.

The NCTIR Program includes the following subprograms:

- The **Emergency Management (EM) subprogram** provides both the structure and processes to administer a comprehensive and integrated approach to emergency management and continuity of operations and enhance the resilience of the Department and the Nation. In addition, EM coordinates a whole-of-community approach to emergency management (to include mitigating, preventing, preparing for, responding to, and recovering from all-hazards emergencies), improving readiness and effectiveness of the DOE Comprehensive Emergency Management System on a programmatic and performance level, while promoting unity of effort and a culture of continuous improvement, and sustaining operations during a continuity event. NNSA is proposing to rename the subprogram from Emergency Operations to Emergency Management which is reflective of the broader portfolio which includes policy, readiness assurance, continuity and mission resilience, and emergency operations.

- The **Counterterrorism and Counterproliferation (CTCP) subprogram** reduces the threat of nuclear and radiological terrorism and nuclear proliferation through innovative science, technology, and policy solutions. CTCP maintains capabilities to avert, respond to, and mitigate the consequences of nuclear and radiological incidents and accidents in the U.S. and abroad. The subprograms supporting the CTCP mission include Nuclear Incident Response (NIR) / Nuclear Emergency Support Team (NEST), National Technical Nuclear Forensics (NTNF), Nuclear Incident Policy and Cooperation (NIPC), and Nuclear Threat Science (NTS).

Nuclear Counterterrorism and Incident Response Program
Funding ($K)

Italics denotes reporting level	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted	
				$	%
Nuclear Counterterrorism & Incident Response Program					
Emergency Management	**29,896**	**29,896**	**23,847**	**-6,049**	**-20.2%**
Counterterrorism and Counterproliferation	**440,074**	**440,074**	**512,342**	**+72,268**	**+16.4%**
Nuclear Incident Response / Nuclear Emergency Support Team	*236,472*	*236,472*	*281,704*	*+45,232*	*+19.1%*
National Technical Nuclear Forensics	*50,555*	*50,555*	*62,900*	*+12,345*	*+24.4%*
Nuclear Incident Policy and Cooperation	*12,067*	*12,067*	*14,567*	*+2,500*	*+20.7%*
Nuclear Threat Science	*140,980*	*140,980*	*153,171*	*+12,191*	*+8.6%*
Subtotal, Counterterrorism and Counterproliferation	**440,074**	**440,074**	**512,342**	**+72,268**	**+16.4%**
Total, Nuclear Counterterrorism & Incident Response Program	**469,970**	**469,970**	**536,189**	**+66,219**	**+14.1%**

Nuclear Counterterrorism and Incident Response Program
Outyear Funding ($K)

Italics denotes reporting level	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Nuclear Counterterrorism & Incident Response Program				
Emergency Management	**33,122**	**33,534**	**34,667**	**34,933**
Counterterrorism and Counterproliferation	**513,740**	**515,240**	**516,740**	**532,041**
Nuclear Incident Response / Nuclear Emergency Support Team	*282,507*	*283,312*	*284,201*	*290,526*
National Technical Nuclear Forensics	*63,082*	*63,265*	*63,296*	*67,195*
Nuclear Incident Policy and Cooperation	*14,609*	*14,652*	*14,838*	*15,283*
Nuclear Threat Science	*153,542*	*154,011*	*154,405*	*159,037*
Subtotal, Counterterrorism and Counterproliferation	**513,740**	**515,240**	**516,740**	**532,041**
Total, Nuclear Counterterrorism & Incident Response Program	**546,862**	**548,774**	**551,407**	**566,974**

Explanation of Major Changes
($K)

	FY 2025 Request vs FY 2023 Enacted
Nuclear Counterterrorism and Incident Response Program	
Emergency Management: Decrease reflects completion of funding for the DOE Emergency Operations Center (EOC) minor construction project, offset by increases to install supporting communications equipment and improve classified communications systems.	**-6,049**
Counterterrorism and Counterproliferation: The increase supports major program priorities, including:	**+72,268**
Nuclear Incident Response/Nuclear Emergency Support Team: The increase provides enhanced NEST capacity to respond to WMD incidents and protect public health and safety with a particular focus on lessons-learned from the Ukraine crisis and related activities; the expansion of the Regional Render Safe training model to implement "Capability Forward Phase 2" (CF2); and planning for infrastructure recapitalization activities to meet training and operations facility requirements.	**+45,232**
National Technical Nuclear Forensics: The increase enables continued progress toward meeting interagency NTNF requirements through improvements in technical expertise, tools, and techniques, increased specialized training, and equipment recapitalization.	**+12,345**
Nuclear Incident Policy and Cooperation: The increase makes additional NEST and U.S. national laboratory emergency response expertise available for domestic and international capacity building activities.	**+2,500**
Nuclear Threat Science: The increase funds NTS red team capability for open source and industry large language models (LLM) to develop a comprehensive understanding of how LLM could aid a non-state actor or proliferant nation in developing or advancing a nascent nuclear weapon capability.	**+12,191**
Total, Nuclear Counterterrorism and Incident Response Program	**+66,219**

Nuclear Counterterrorism and Incident Response Program
Emergency Management

Description

The Emergency Management (EM) subprogram is DOE's Office of Primary Interest (OPI) for several unique and mandated Emergency Management and Continuity functions, offices, and capabilities. The subprogram:

- Administers and manages the 24/7/365 DOE EOC.
- Serves as the emergency management focal point for all incidents, events, emergencies, emergency notifications, and reports.
- Oversees coordination, development, and maintenance of enterprise-wide emergency management policy, procedure, training, and exercise responsibilities.
- Executes Department-level responsibility for Continuity of Operations (COOP), Continuity of Government (COG), and Enduring Constitutional Government (ECG) programs.
- Implements Federal Mission Resilience Strategy and the tenets of Executive Order (EO) 13961.
- Convenes and chairs the Emergency Management Advisory Committee.
- Manages and coordinates an Emergency Management Readiness Assurance program.
- Develops and maintains the DOE Enterprise Threat and Hazard Risk Profile.

The FY 2025 Budget Request will focus Headquarters (HQ) EM activities and resources across the following subprograms:

- The Preparedness, Planning, and Readiness Assurance Program areas promote a whole-of-community approach to mitigate, prevent, prepare for, respond to, and recover from all-hazards events. This program area develops and implements emergency management policy, directives, guidance, and plans for DOE and NNSA; assists Headquarters, Field Elements, and facility contractors in implementing effective emergency management programs in compliance with DOE policies; and leads the exchange of Management and Operating (M&O) best practices via the Emergency Management Issues Special Interest Group (EMI-SIG). This program area also implements, manages, and coordinates a readiness assurance program, develops, leads, and evaluates national level exercises, performs periodic oversight functions on behalf of Field Element Managers in accordance with the Chief of Defense Nuclear Safety, and facilitates cross-cutting emergency management related collaboration via the Federal Officials Emergency Management Advisory Committee (EMAC).

- The Continuity and Mission Resilience Program executes DOE and NNSA COOP, COG, and ECG programs to advance the National Continuity Policy and ensures availability and interoperability of continuity communications systems across DOE/NNSA. In addition, the subprogram, along with interagency partners, deploys continuity capabilities during "with-notice" or "no-notice" emergencies and NSSEs, including the Presidential Inauguration and State of the Union Address, and in accordance with Executive Order 13961, "Governance and Integration of Federal Mission Resilience," advances implementation of the three lines of effort outlined in the Federal Mission Resilience Strategy (FMRS) across the enterprise.

- The Emergency Operations program operates and maintains the Department's Emergency Operations Center to include the 24/7/365 Watch Office, a central point-of-contact regarding local and national emergencies, heightened international tension, Departmental emergencies, natural disasters, and acts of terrorism. The program ensures that DOE/NNSA leadership is informed about emergency matters, serves as the unifying and mission enabling element for emergency management, and staffs a cadre of Emergency Management Specialists responsible for whole-of-department emergency management support.

Highlights of the FY 2025 Budget Request

- Manage, implement, and advance DOE and NNSA COOP, COG, and higher-level continuity programs.
- Advance integration of the Federal Mission Resilience Strategy and "Assess, Distribute, Sustain" mantra across the Department.
- Provide and maintain interoperability and availability of continuity facilities, communications systems, and capabilities.

- Deploy and manage continuity capabilities during “with-notice” or “without-notice events” and National Special Security Events.
- Lead, manage, and operate the DOE EOC, providing situational awareness of emerging or evolving all-hazard events.
- Inform and provide situational awareness to DOE and NNSA senior leadership on all emergency matters.
- Lead current and future operational management of information and enables provision of a common operating picture related to events and incidents.
- Manage the DOE Unified Coordination Group (UCG) structure in support of DOE and NNSA emergency response efforts.
- Develop, lead, and evaluate national-level exercises for DOE and NNSA.
- Administer and chair the Federal Officials EMAC.
- Assist Headquarters, Field Elements, and facility contractors in implementing emergency management programs.
- Implement, manage, and coordinate Emergency Management Readiness Assurance Reporting Program.
- Manage the emergency management technical qualification program.
- Host and lead the annual Emergency Management Symposium.
- Lead the design and development of DOE participation in key exercises, including Eagle Horizon.
- Ensure interoperability of emergency communications systems across DOE/NNSA and with interagency partners.
- Update, revise, and validate of core DOE and NNSA emergency management documents, emergency management and continuity directives, guides, standards, and technical planning basis standards.
- Enhance the security and resilience of the Department and Nation.

FY 2023 Accomplishments

- Led a September 2023 Senior Leader Facilitated Discussion with 24 participants, as part of the annual Eagle Horizon continuity exercise series.
- Completed DOE/NNSA listening sessions for the rewrite of DOE Order 151.1D *Comprehensive Emergency Management System*.
- Conducted data calls from DOE, NNSA, and interagency stakeholders on their needs for the DOE EOC and incorporated the feedback into the renovation planning efforts.
- Strengthened coordination and reporting between intelligence and emergency management missions by commencing operations on an Emergency Operations Desk within the Intelligence Operations Center.
- Coordinated the activation of the UCG for multiple international and domestic incidents impacting DOE and NNSA missions.
- Advanced Federal Mission Resilience Strategy creation and continued implementation across the Department and the interagency.
- Continued to engage with DOE and NNSA Senior Leadership on developments of the invasion of Ukraine and updates to the Russian occupation of the Zaporizhzhia Nuclear Power Plant.
- Updated and validated emergency management and continuity orders, directives, guides, and technical planning basis standards.
- Participated in 13 individual site visits and exercises across the Labs, Plants, Sites and Offices and accomplished observation and evaluation activities and developed critical relationships with personnel across the Emergency Management Enterprise.
- Hosted the 37th annual offering of the DOE-wide emergency management-based forum, referred to as the EMI-SIG to enable discussions on topics focused on preparedness, mitigation, response, and recovery as it relates to sustainability.
- Developed and promulgated the FY 2022 Annual Report on the Status of the Department’s Emergency Management System, capturing input from 39 sites, facilities, and activities within the DOE/NNSA enterprise, and reflecting readiness assurance results for DOE and NNSA entities.

Emergency Management
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Emergency Management $29,896,000	**Emergency Management $23,847,000**	**Emergency Management -$6,049,000**
• Provided emergency management expertise, leadership, and guidance across the entire DOE/NNSA emergency management enterprise. • Executed COOP and COG programs. • Operated and maintained the DOE EOC to receive, coordinate, validate, and disseminate emergency information to various DOE, NNSA, interagency, and other program offices and related entities. • Executed the design concept study for the DOE EOC renovation project. • Hosted the 37th annual Department-wide emergency management forum. • Reinstituted and strengthened the site liaison program in implementing revised DOE/NNSA emergency management and continuity orders, including site training and exercises. • Provided two additional nodes to an unclassified communications network and improved support to classified communications systems. • Assessed key site readiness assurance levels, culminating in the development and promulgation of the annual report for the Department's Emergency Management System, based on FY 2022 evaluations and submissions. • Refined and hosted the Unified Coordination Group for DOE for the Tashkent incident and Zaporizhzhia dam explosion.	• Provide emergency management expertise, leadership, and guidance across the entire DOE/NNSA emergency management enterprise. • Execute COOP and COG programs. • Operate and maintain the DOE EOC to receive, coordinate, validate, and disseminate emergency information to various DOE, NNSA, interagency, and other program offices and related entities. • Execute the design concept study for the DOE EOC renovation project. • Host the 39th annual Department-wide emergency management symposium. • Provide two additional nodes to an unclassified communications network, improve support to classified communications systems, and begin lifecycle replacement cycle of our various continuity and emergency communications capabilities. • Assess key site readiness assurance levels, culminating in the development and promulgation of a streamlined annual report for the Department's Emergency Management System, based on FY 2024 evaluations and submissions. • Convene and host the Emergency and Incident Management Council, Unified Coordination Group and Incident Support Team(s) in support of DOE and NNSA leadership.	• Completion of funding for the DOE EOC minor construction project.

Nuclear Counterterrorism and Incident Response Program
Counterterrorism and Counterproliferation

Description
The Counterterrorism and Counterproliferation (CTCP) subprogram provides technical expertise, practical tools, and scientifically informed policy recommendations to advance U.S. nuclear counterterrorism and counterproliferation objectives. CTCP focuses on nuclear and radiological incidents and accidents, with the core mission to prepare for and respond to such events.

The **Nuclear Incident Response/Nuclear Emergency Support Team (NIR/NEST)** subprogram serves as the Nation's last line of defense against nuclear or radiological emergencies. Its mission is to apply the unique technical expertise within DOE/NNSA's nuclear security enterprise to prepare for, prevent, respond to, and, where possible, mitigate the consequences of nuclear or radiological events worldwide.

This subprogram works closely with other DOE elements as well as partner federal organizations, including the Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA), Environmental Protection Agency (EPA), Nuclear Regulatory Commission (NRC), DoD, FBI, and the Intelligence Community. CTCP provides technical assistance to respond domestically or abroad to nuclear and radiological emergencies, including terrorist threats involving nuclear materials, and conduct exercises and provide support to the NEST programs to ensure safe incident resolution and the protection of public safety and the environment. CTCP accomplishes this mission by ensuring the appropriate infrastructure is in place to provide command, control, coordination, and communications of DOE/NNSA nuclear incident response assets. CTCP also makes sure the incident response personnel are properly organized, trained, and equipped to rapidly deploy in response to an incident.

Funding in the FY 2025 Request enhances the Capability Forward initiative, enabling regional FBI counter-WMD teams to take decisive action against a WMD device accelerating life-saving responses to nuclear and radiological threats. CF2 training development capabilities will expand and enhance capabilities within all FBI field offices to secure and defeat WMD devices. CTCP will deliver curriculum in a standardized manner that builds and sustains the mastery of skills critical for effective emergency response.

Funding in the FY 2025 Budget Request also provides support for dedicated infrastructure recapitalization activities.

The **National Technical Nuclear Forensics (NTNF)** subprogram maintains the nuclear forensics technical and operational capabilities that support core U.S. Government nuclear forensics mission areas. The NTNF subprogram holds key roles in supporting ground sample collection, performing in-field sample processing, device disassembly, nuclear material analysis, and device assessment through reverse engineering.

The NTNF subprogram sustains mission readiness through training, drills, and exercises for responders; maintenance and development of highly sophisticated equipment, tools, and techniques; technical integration and maintenance of specialized pre- and post-detonation response teams and facilities. Additionally, continued development of the National Nuclear Material Archive (NNMA) ensures high-value historical nuclear material samples are identified, prioritized, analyzed, and characterized. Comparative analysis of material characteristics significantly aids assessment of interdicted materials and thus enhances technical nuclear forensics capabilities for attribution.

The FY 2025 Budget Request maintains operational and scientific expertise at the U.S. national laboratories that constitute an essential element of the Nation's nuclear deterrence strategy, helping to dissuade foreign states from supporting or facilitating non-state actors' acquisition of nuclear materials, either wittingly or unwittingly, and attempting to conduct clandestine nuclear attacks.

The **Nuclear Incident Policy and Cooperation (NIPC)** subprogram strengthens emergency preparedness and response for all radiological or nuclear incidents and accidents posing a potential risk to U.S. territory, citizens, or interests. This

subprogram works domestically with federal, state, and local officials to expand their capabilities to respond to radiological or nuclear incidents and accidents. As part of a robust strategy to protect the U.S. from potential radiological or nuclear threats, this program also cooperates with key international partners to strengthen their ability to effectively address radiological or nuclear incidents in their region—with or without U.S. involvement—as far from U.S. territory as possible.

The FY 2025 Budget Request expands preparedness and response training and engagements and provides complementary funding support to NEST capabilities for capacity building expertise and technical reachback.

The **Nuclear Threat Science (NTS)** subprogram provides the nation's technical capability to understand and defeat nuclear threat devices, including INDs, RDDs, and lost or stolen foreign nuclear weapons. NTS maintains and advances this technical capability through partnerships with DOE/NNSA's nuclear weapons design laboratories and production facilities and through technical and policy exchanges with the United Kingdom and France. NTS also conducts focused science on explosive and nuclear material behaviors. In particular, NTS performs integrated experiments as part of risk assessments of nuclear materials and nuclear threat devices in support of interagency and international partners. Collectively, this work shapes the U.S. understanding of nuclear terrorism and nuclear proliferation threats.

This 2025 Budget Request will enhance U.S. national laboratory capabilities for highly specialized nuclear threat science assessments, while improving predictive capabilities in support of crisis operations. NTS will conduct scientific studies, including integrated experiments, perform technical assessments in support of the Design Basis Threat (DBT), and provide technical input for international nuclear security engagements.

NTS will also lead NNSA's Artificial Intelligence (AI) Red Teaming capability to better understand how AI, and large language models (LLMs) in particular, alter the WMD threat landscape to directly support implementation of the President's Executive Order on Safe, Secure, and Trustworthy Development and Use of AI (EO 14110). The FY 2025 Request allows NTS to implement a comprehensive, scalable, and repeatable evaluation and reporting framework for assessing how AI could advance an adversary's nuclear capability. This funding will further enable research and development to ensure AI Red Teaming can keep pace with ongoing innovation across the AI industry.

Highlights of the FY 2025 Budget Request

- Ensure NEST is prepared to respond to radiological/nuclear incidents and accidents with highly trained and equipped personnel.
- Develop unified technical training for NEST and its interagency partners.
- Maintain and improve NEST capabilities through planned and emergent training, exercises, and response operations.
- Provide security and assessment capabilities for nuclear threat device designs across the entire counterterrorism and counterproliferation mission space by evaluating nuclear threat device concepts and materials, developing and maintaining predictive modeling capabilities, and executing selected focused and integrated experiments.
- Address gaps in nuclear counterterrorism and counterproliferation expertise and technology, develop technologies for innovative applications, perform contingency planning efforts, conduct training, and maintain expertise to support interagency and international partners in the counterterrorism and counterproliferation mission space.
- Increase capacity to perform assessments of nuclear threat device designs and materials in support of DoD strategic partnership.
- Develop a repeatable framework that could be used by policymakers and regulators to gauge the information proliferation threat posed by individual LLMs.
- Develop and retain experts whose authoritative understanding of nuclear science can be applied to the AI domain.
- Procure and sustain dedicated classified cloud computing environments to support AI Red Teaming capability.
- Maintain and develop technical and operational nuclear forensics capabilities and operational readiness.
- Serve as the technical lead for government-wide National Technical Nuclear Forensics efforts.
- Address technical gaps to meet post detonation nuclear forensic assessments, particularly in assessment timelines.
- Increase participation in national-level and interagency exercises and international technical exchanges with U.S. allies.

- Conduct in-person, hybrid, and virtual trainings, technical exchanges, workshops, scenario-based policy discussions, and exercises with domestic and foreign partners and international organizations to improve global capacity to respond to nuclear and radiological events, regardless of their cause.
- Strengthen State, local, and international emergency preparedness and response through nuclear counterterrorism and incident response training, exercises and technical exchanges leveraging best practices and lessons learned from NEST Federal expertise and capabilities.
- Conduct analysis of radiological dispersal device experiments to improve response to WMD terrorism events.
- Expand international collaboration for medical response to radiological events.
- Develop new trainings and exercises to address emerging needs, combining virtual and in-person methods, and incorporating advanced learning techniques and technology.
- Address growing infrastructure expansion and recapitalization demands.

FY 2023 Accomplishments

- Through the Ukraine Task Force (UTF), CTCP took unprecedented actions to address nuclear risks stemming from the conflict in Ukraine, advancing U.S. capabilities across multiple disciplines, including in remote sensing, crisis management, capacity building, resilience, and strategic messaging.
- Advanced radiological and nuclear emergency preparedness and response domestically and internationally by conducting 60 virtual or in-person training events on topics including crisis communication, nuclear incident preparedness and response, medical response, and security of major public events, as well as direct engagement to strengthen emergency preparedness and response posture and capability of 10 international partners.
- Completed selection, characterization, and testing of critical materials supporting execution of major integrated experimental campaign.
- Executed direct technical support to an interagency partner's contingency mission goals and plans.
- Led continued nuclear forensics community progress toward satisfying requirements designed to support urgent Presidential decision making in a crisis, including selected enhancements (driven largely by the Ukraine crisis) for the U.S. to detect and interpret nuclear detonations to support attribution and deterrence.
- Improved public awareness of the role nuclear forensics plays in U.S. strategic nuclear deterrence.
- Increased the amount of forensically valuable National Nuclear Material Archive material by 30%.
- Maintained accreditation of Nuclear Forensics Pre-detonation Materials Analysis laboratories.
- Implemented a new exercise series for nuclear forensics pre-detonation material analysis laboratories.
- Participated in eight nuclear forensics exercises, spanning all forensics mission areas.
- Effectively maintained cooperative relationships with international partners for nuclear forensics technical exchanges.
- Improved nuclear forensics infrastructure, equipment, technology, and capabilities, including initiation of capital asset infrastructure minor construction projects at two sites to enhance analytical capacity.
- Initiated a standardized training program to ensure the readiness of NEST and its global response force partners.
- Executed specified NEST operations in support of deployed U.S. nuclear weapon requirements.
- Continued to develop and implement a classified communications system to communicate with interagency partners.
- In cooperation with the DOE/NNSA Office of DNN Research & Development program, supported the development of new tools that support WMD device defeat, nuclear search, detection, and remediation.
- Conducted strategic messaging efforts to educate interagency partners, congressional audiences, and members of the public about the CTCP mission, as well as influence adversary perceptions of the U.S. Government counterterrorism and counterproliferation capabilities.
- NEST conducted 10 unscheduled operations, protecting the U.S. public's health and safety, and supporting unique requirements for Ukraine.
- NEST conducted 20 scheduled operations to protect major public events.
- NEST honed operational readiness through participation in 39 exercises and joint drills.
- NEST tested and fielded new tools for FBI regional teams as part of the NNSA-FBI "Capability Forward" initiative.
- Continued AMS Phase II recapitalization procurement efforts to replace two aging two rotary-wing aircraft, with delivery of new aircraft expected in the third quarter of FY 2024.

Counterterrorism and Counterproliferation
Funding

Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Counterterrorism and Counterproliferation $440,074,000	**Counterterrorism and Counterproliferation $512,342,000**	**Counterterrorism and Counterproliferation +$72,268,000**
Nuclear Incident Response/Nuclear Emergency Support Team $236,472,000	***Nuclear Incident Response/Nuclear Emergency Support Team $281,704,000***	***Nuclear Incident Response/Nuclear Emergency Support Team +$45,232,000***
• Maintained readiness to conduct NEST response missions. • Conducted operations to detect nuclear and radiological materials during high-profile events. • Procured mission critical equipment to recapitalize equipment that has exceeded its useful life. • Sustained enhancements of regional render safe capabilities in conjunction with the FBI. • Began the development of a NEST standards and training program. • Developed science and technologies that are most promising to improve the quality or speed of nuclear terrorism threat response.	• Maintain readiness to conduct NEST response missions. • Conduct operations to detect nuclear and radiological materials during high-profile events. • Procure mission critical equipment to recapitalize equipment that has exceeded its useful life. • Sustain enhancements of WMD device defeat capabilities to the Level V cities in conjunction with the FBI. • Continue to develop the NEST training program, focused on content for FBI regional render safe teams and field offices. • Develop science and technologies that are most promising to improve the quality or speed of nuclear terrorism threat response. • Prepare acquisition plan for NEST Training and Operations Center (NTOC).	• Accelerates development of a standardized training program (NEST Standards and Training Program (NSTP), including an acquisition plan for required infrastructure, to prepare and ensure the readiness of NEST and its global response force partners for detecting, securing, and defeating radiological and nuclear threats. • Applies lessons learned from the NEST response to Ukraine by implementing a steady-state operations program to monitor and mitigate risks from state-level conflict around nuclear fuel cycle facilities.
National Technical Nuclear Forensics $50,555,000	***National Technical Nuclear Forensics $62,900,000***	***National Technical Nuclear Forensics +$12,345,000***
• Maintained readiness to respond to pre- and post- detonation nuclear events. • Provided technical and operational capabilities in support of the interagency NTNF program, leading technical components performed at the U.S. national laboratories.	• Maintain readiness to respond to pre- and post-detonation nuclear events. • Provide technical and operational capabilities in support of the interagency NTNF program, leading technical components performed at the U.S. national laboratories.	• Enhances the Device Assessment and Design Heritage capabilities through improved methodologies; training; and technical and operational integration. • Operationalizes advanced technologies across all nuclear forensics mission areas, including,

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
• Advanced analytic techniques for material samples and prompt signals. • Participated in one Ground Collection Task Force field exercise and one enhanced training event, two Post-Detonation device assessment training and drill events, and two DFEAT exercises. • Sustained preventative and corrective facility maintenance at P-Tunnel. • Expanded operational capacity for nuclear material analysis laboratories. • Identified, prioritized, analyzed, and characterized NNMA samples. • Led U.S. nuclear forensics technical collaboration efforts with the United Kingdom.	• Operationalize advanced analytic techniques to make progress toward meeting USG nuclear forensics requirements. • Participate in two post-detonation field exercises including an enhanced training event, two Post-Detonation Device Assessment training and drill events, two DFEAT exercises, and two Epic Shadow exercises. • Sustain preventative and corrective facility maintenance at P-Tunnel. • Expand operational capacity for NFMAP laboratories. • Identify, prioritize, analyze, and characterize NNMA material samples. • Lead U.S. nuclear forensics technical collaboration efforts with the United Kingdom.	modeling, measurements, diagnostics, tools, and techniques. • Consolidates and sustains prior-year advances in nuclear forensics capabilities to meet interagency requirements.
Nuclear Incident Policy and Cooperation ***$12,067,000***	***Nuclear Incident Policy and Cooperation*** ***$14,567,000***	***Nuclear Incident Policy and Cooperation*** ***+$2,500,000***
• Conducted 18 advanced partnership engagements, specialized technical exchanges, and workshops. • Conducted seven *Silent Thunder* domestic WMD counterterrorism tabletop exercises (TTXs). • Conducted 13 international nuclear and radiological training courses, operational support, and provide technical support. • Conducted 15 multilateral and bilateral scenario-based policy discussions, CT domestic and international TTXs. • Developed new Counterterrorism Response & Capacity Building Respond initiatives in concert with DNN *Prevent-Counter* mission and support activities.	• Conduct 20 advanced partnership engagements, specialized technical exchanges, and workshops. • Conduct seven *Silent Thunder* domestic WMD counterterrorism TTXs. • Conduct 15 international nuclear and radiological training courses, technical exchanges, operational support, and provide technical support. • Conduct 16 multilateral and bilateral scenario-based policy discussions, CT domestic and international TTXs. • Develop new Counterterrorism Response & Capacity Building Respond initiatives in concert with DNN *Prevent-Counter* mission and support activities.	• Provides additional capacity for U.S. national laboratory emergency response expertise and NEST capabilities. • Strengthens domestic and international emergency preparedness and response by increasing the number of capacity building engagements. • Develops and executes new tailored training courses and exercises drawing from lessons learned and requests from the Ukraine Crisis.

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Nuclear Threat Science $140,980,000	***Nuclear Threat Science $153,171,000***	***Nuclear Threat Science +$12,191,000***
• Maintained capability to perform assessments of nuclear threat devices, while protecting sensitive nuclear information from unauthorized disclosure. • Executed integrated experiments to validate nuclear threat assessments. • Conducted foundational science to support technical assessments of nuclear materials, explosives, and nuclear threat device designs in support of operational partners and the intelligence and security communities. • Conducted research of technologies in support of U.S. Government CTCP strategic priorities.	• Maintain capability to perform assessments of nuclear threat devices., while protecting sensitive nuclear information from unauthorized disclosure. • Execute integrated experiments to validate nuclear threat assessments. • Conduct foundational scientific work to inform technical assessments of nuclear materials, explosives, and device designs in support of mission partners. • Conduct research of technologies in support of USG CTCP strategic priorities. • Develop a comprehensive understanding of how a representative LLM could aid a non-state actor or proliferant nation in developing or advancing a nascent nuclear weapon capability.	• Enables Red Teaming capabilities for a wide range of open-source and industry AI systems: ○ Develops guidance and benchmarks for evaluating and auditing AI capabilities in nuclear security domains and establishing classified cloud and on-premises (hybrid) computing environments.

Nuclear Counterterrorism and Incident Response Program
Capital Equipment Summary
($K)

	Total	Prior Years	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 vs FY 2023 ($)
Capital Equipment (> $500K)						
Total Non-MIE Capital Equipment (TEC <$10M)	N/A	N/A	7,327	7,884	8,278	+951
High Performance Computing (HPC) Upgrade, LANL[a]	14,000	0	14,000	0	0	-14,000
High Performance Computing (HPC) Upgrade, LLNL[a]	10,000	0	10,000	0	0	-10,000
High Performance Computing (HPC) Upgrade, SNL[a]	10,700	0	10,700	0	0	-10,700
Total, Capital Equipment	**N/A**	**N/A**	**42,027**	**7,884**	**8,278**	**-33,749**

[a] Funds were provided by Division M of P.L. 117-328 in support of NNSA's Ukraine crisis response activities and are included in this table for purposes of MIE notification.

Nuclear Counterterrorism and Incident Response Program
Outyear Capital Equipment Summary
($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
Capital Equipment (> $500K)					
Total Non-MIE Capital Equipment (TEC <$10M)	8,543	8,722	8,906	9,093	N/A
Total, Capital Equipment	**8,543**	**8,722**	**8,906**	**9,093**	**N/A**

DEPARTMENT OF ENERGY
Funding by Site
TAS_0309 - Defense Nuclear Nonproliferation - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Argonne National Laboratory			
Reactor Conversion and Uranium Supply	25,643	25,643	23,933
Plutonium Disposition	210	210	150
Material Management and Minimization	25,853	25,853	24,083
International Nuclear Security	1,097	632	633
Radiological Security	2,836	3,286	3,286
Nuclear Smuggling Detection and Deterrence	852	2,041	2,163
Global Material Security	4,785	5,959	6,082
Nonproliferation & Arms Control	13,743	13,700	14,400
Proliferation Detection R&D	3,860	3,450	3,775
Nonproliferation Fuels Development	4,000	4,000	0
Forensics R&D	575	575	489
Nonproliferation Stewardship Program	1,810	873	873
Defense Nuclear Nonproliferation R&D	10,245	8,898	5,137
NNSA Bioassurance Program	250	250	0
Emergency Management (formerly Emergency Operations)	704	250	275
Counterterrorism and Counterproliferation	3,606	4,155	5,013
Nuclear Counterterrorism & Incident Response	4,310	4,405	5,288
Total Argonne National Laboratory	**59,186**	**59,065**	**54,990**
Brookhaven National Laboratory			
Reactor Conversion and Uranium Supply	484	484	375
Material Management and Minimization	484	484	375
Radiological Security	1,814	1,527	1,527
Nuclear Smuggling Detection and Deterrence	515	2,041	2,163
Global Material Security	2,329	3,568	3,690
Nonproliferation & Arms Control	3,302	3,300	3,314
Proliferation Detection R&D	7,957	7,683	8,407
Forensics R&D	475	475	404
Nonproliferation Stewardship Program	300	0	0
Defense Nuclear Nonproliferation R&D	8,732	8,158	8,811
Counterterrorism and Counterproliferation	3,289	3,036	3,692
Nuclear Counterterrorism & Incident Response	3,289	3,036	3,692
Total Brookhaven National Laboratory	**18,136**	**18,546**	**19,882**
Consolidated Business Center			
Plutonium Disposition	60	60	25
Material Management and Minimization	60	60	25
Nuclear Detonation Detection	250	253	293
Defense Nuclear Nonproliferation R&D	250	253	293
Total Consolidated Business Center	**310**	**313**	**318**
Fermi National Accelerator Laboratory			
Proliferation Detection R&D	750	775	848

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Funding by Site
TAS_0309 - Defense Nuclear Nonproliferation - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Defense Nuclear Nonproliferation R&D	750	775	848
Total Fermi National Accelerator Laboratory	**750**	**775**	**848**
Idaho National Laboratory			
Reactor Conversion and Uranium Supply	46,095	46,095	43,085
Nuclear Material Removal and Elimination	5,021	5,021	9,280
Material Management and Minimization	51,116	51,116	52,365
International Nuclear Security	201	6,319	6,319
Radiological Security	16,879	17,019	17,019
Nuclear Smuggling Detection and Deterrence	131	1,418	1,503
Global Material Security	17,211	24,756	24,841
Nonproliferation & Arms Control	4,142	4,120	2,951
Proliferation Detection R&D	8,443	8,059	8,819
Nonproliferation Fuels Development	9,740	9,740	0
Forensics R&D	900	900	765
Nonproliferation Stewardship Program	3,745	4,247	4,242
Defense Nuclear Nonproliferation R&D	22,828	22,946	13,826
Emergency Management (formerly Emergency Operations)	30	0	0
Counterterrorism and Counterproliferation	6,836	5,165	6,499
Nuclear Counterterrorism & Incident Response	6,866	5,165	6,499
Total Idaho National Laboratory	**102,163**	**108,103**	**100,482**
Kansas City National Security Complex (KCNSC)			
Plutonium Disposition	6,750	6,750	31,850
Material Management and Minimization	6,750	6,750	31,850
Nonproliferation & Arms Control	3,080	3,100	2,746
Proliferation Detection R&D	850	868	950
Nonproliferation Stewardship Program	1,000	1,338	1,337
Defense Nuclear Nonproliferation R&D	1,850	2,206	2,287
Counterterrorism and Counterproliferation	39,740	28,984	35,148
Nuclear Counterterrorism & Incident Response	39,740	28,984	35,148
Total Kansas City National Security Complex (KCNSC)	**51,420**	**41,040**	**72,031**
Lawrence Berkeley National Laboratory			
Nonproliferation & Arms Control	1,824	1,700	1,612
Proliferation Detection R&D	15,669	15,615	17,087
Forensics R&D	245	120	102
Nonproliferation Stewardship Program	2,700	0	0
Defense Nuclear Nonproliferation R&D	18,614	15,735	17,189
NNSA Bioassurance Program	500	500	0
Emergency Management (formerly Emergency Operations)	450	240	375
Counterterrorism and Counterproliferation	90	285	2,102
Nuclear Counterterrorism & Incident Response	540	525	2,477
Total Lawrence Berkeley National Laboratory	**21,478**	**18,460**	**21,278**

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Funding by Site
TAS_0309 - Defense Nuclear Nonproliferation - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Lawrence Livermore National Laboratory			
Reactor Conversion and Uranium Supply	0	0	200
Nuclear Material Removal and Elimination	6	6	0
Plutonium Disposition	100	100	104
Material Management and Minimization	106	106	304
International Nuclear Security	2,832	8,704	8,704
Radiological Security	8,706	7,998	7,998
Nuclear Smuggling Detection and Deterrence	5,139	2,041	2,163
Global Material Security	16,677	18,743	18,865
Nonproliferation & Arms Control	38,357	38,500	36,906
Proliferation Detection R&D	38,828	39,524	43,250
Nuclear Detonation Detection	21,787	30,957	35,820
Forensics R&D	10,069	10,030	8,527
Nonproliferation Stewardship Program	15,925	22,455	22,433
Defense Nuclear Nonproliferation R&D	86,609	102,966	110,030
NNSA Bioassurance Program	6,500	6,500	0
Counterterrorism and Counterproliferation	102,086	109,110	98,597
Nuclear Counterterrorism & Incident Response	102,086	109,110	98,597
Total Lawrence Livermore National Laboratory	**250,335**	**275,925**	**264,702**
Los Alamos National Laboratory			
Reactor Conversion and Uranium Supply	1,405	1,405	470
Nuclear Material Removal and Elimination	460	460	200
Plutonium Disposition	66,475	66,475	74,488
Material Management and Minimization	68,340	68,340	75,158
International Nuclear Security	709	3,668	3,668
Radiological Security	23,516	23,848	23,848
Nuclear Smuggling Detection and Deterrence	10,244	6,122	6,490
Global Material Security	34,469	33,638	34,006
Nonproliferation & Arms Control	45,207	45,000	48,554
Proliferation Detection R&D	42,561	39,234	42,932
Nuclear Detonation Detection	97,772	108,424	125,453
Forensics R&D	10,911	10,425	8,863
Nonproliferation Stewardship Program	5,210	3,746	3,743
Defense Nuclear Nonproliferation R&D	156,454	161,829	180,991
NNSA Bioassurance Program	6,195	6,195	0
Counterterrorism and Counterproliferation	85,554	81,086	89,500
Nuclear Counterterrorism & Incident Response	85,554	81,086	89,500
Total Los Alamos National Laboratory	**396,219**	**396,088**	**428,209**
National Energy Technology Lab			
Plutonium Disposition	1,150	1,150	1,270
Material Management and Minimization	1,150	1,150	1,270
International Nuclear Security	300	0	0
Radiological Security	0	403	403

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Funding by Site
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	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Global Material Security	300	403	403
Proliferation Detection R&D	850	155	170
Defense Nuclear Nonproliferation R&D	850	155	170
Counterterrorism and Counterproliferation	555	0	0
Nuclear Counterterrorism & Incident Response	555	0	0
Total National Energy Technology Lab	**2,855**	**1,708**	**1,843**
Nevada Field Office			
Nuclear Detonation Detection	300	304	352
Defense Nuclear Nonproliferation R&D	300	304	352
Emergency Management (formerly Emergency Operations)	61	110	110
Counterterrorism and Counterproliferation	72	65	95
Nuclear Counterterrorism & Incident Response	133	175	205
Total Nevada Field Office	**433**	**479**	**557**
Nevada National Security Site			
Nuclear Material Removal and Elimination	300	300	625
Material Management and Minimization	300	300	625
International Nuclear Security	600	0	0
Global Material Security	600	0	0
Nonproliferation & Arms Control	1,348	1,300	1,248
Proliferation Detection R&D	16,753	17,133	18,749
Nuclear Detonation Detection	27,488	17,416	20,151
Forensics R&D	250	200	170
Nonproliferation Stewardship Program	19,450	29,436	29,406
Defense Nuclear Nonproliferation R&D	63,941	64,185	68,476
Counterterrorism and Counterproliferation	47,681	46,591	56,517
Nuclear Counterterrorism & Incident Response	47,681	46,591	56,517
Total Nevada National Security Site	**113,870**	**112,376**	**126,866**
NNSA Albuquerque Complex			
Reactor Conversion and Uranium Supply	118	118	0
Nuclear Material Removal and Elimination	0	0	500
Material Management and Minimization	118	118	500
International Nuclear Security	4,622	1,952	1,952
Radiological Security	39,653	36,388	36,388
Nuclear Smuggling Detection and Deterrence	58,236	81,016	85,875
Global Material Security	102,511	119,356	124,215
Proliferation Detection R&D	15,000	19,557	21,401
Nuclear Detonation Detection	13,350	10,789	12,483
Forensics R&D	5,000	5,000	4,251
Nonproliferation Stewardship Program	12,173	8,493	8,485
Defense Nuclear Nonproliferation R&D	45,523	43,839	46,620
Counterterrorism and Counterproliferation	619	12,555	2,072
Nuclear Counterterrorism & Incident Response	619	12,555	2,072
Legacy Contractor Pensions and Settlement Payments - DNN	55,708	55,708	7,128

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	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Total NNSA Albuquerque Complex	**204,479**	**231,576**	**180,535**
NNSA Production Office (NPO) - TN			
Reactor Conversion and Uranium Supply	26,341	26,341	0
Material Management and Minimization	26,341	26,341	0
Total NNSA Production Office (NPO) - TN	**26,341**	**26,341**	**0**
Oak Ridge Institute for Science & Education			
International Nuclear Security	40	0	0
Radiological Security	10	0	0
Global Material Security	50	0	0
Nonproliferation & Arms Control	139	140	159
Counterterrorism and Counterproliferation	3,193	3,443	4,240
Nuclear Counterterrorism & Incident Response	3,193	3,443	4,240
Total Oak Ridge Institute for Science & Education	**3,382**	**3,583**	**4,399**
Oak Ridge National Laboratory			
Reactor Conversion and Uranium Supply	3,642	3,642	2,500
Nuclear Material Removal and Elimination	5,150	5,150	6,680
Plutonium Disposition	9,350	9,350	7,848
Material Management and Minimization	18,142	18,142	17,028
International Nuclear Security	4,327	14,105	14,106
Radiological Security	21,480	21,160	21,160
Nuclear Smuggling Detection and Deterrence	20,413	26,320	27,899
Global Material Security	46,220	61,585	63,165
Nonproliferation & Arms Control	28,986	29,000	30,574
Proliferation Detection R&D	38,762	38,761	42,415
Nonproliferation Fuels Development	6,000	6,000	0
Forensics R&D	3,800	3,300	2,806
Nonproliferation Stewardship Program	36,627	21,437	21,416
Defense Nuclear Nonproliferation R&D	85,189	69,498	66,637
NNSA Bioassurance Program	250	250	0
Counterterrorism and Counterproliferation	9,320	8,860	11,447
Nuclear Counterterrorism & Incident Response	9,320	8,860	11,447
Total Oak Ridge National Laboratory	**188,107**	**187,335**	**188,851**
Office of Scientific & Technical Information			
Nonproliferation & Arms Control	7	8	0
Nuclear Detonation Detection	80	84	100
Defense Nuclear Nonproliferation R&D	80	84	100
Total Office of Scientific & Technical Information	**87**	**92**	**100**
Pacific Northwest National Laboratory			
Reactor Conversion and Uranium Supply	17,179	17,179	18,370

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Funding by Site
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(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Nuclear Material Removal and Elimination	5	5	200
Plutonium Disposition	3,345	3,345	1,971
Material Management and Minimization	20,529	20,529	20,541
International Nuclear Security	39,774	16,858	16,859
Radiological Security	83,304	79,566	79,566
Nuclear Smuggling Detection and Deterrence	67,541	37,034	39,255
Global Material Security	190,619	133,458	135,680
Nonproliferation & Arms Control	35,350	35,500	35,386
Proliferation Detection R&D	28,444	22,817	24,968
Nuclear Detonation Detection	20,701	18,714	21,654
Forensics R&D	5,669	5,764	4,900
Nonproliferation Stewardship Program	12,501	19,919	19,899
Defense Nuclear Nonproliferation R&D	67,315	67,214	71,421
NNSA Bioassurance Program	900	900	0
Emergency Management (formerly Emergency Operations)	2,397	1,931	1,326
Counterterrorism and Counterproliferation	7,827	4,779	6,272
Nuclear Counterterrorism & Incident Response	10,224	6,710	7,598
Total Pacific Northwest National Laboratory	**324,937**	**264,311**	**270,626**
Pantex Plant			
Plutonium Disposition	6,000	6,000	4,018
Material Management and Minimization	6,000	6,000	4,018
Nonproliferation & Arms Control	2,120	7,000	7,500
Counterterrorism and Counterproliferation	4,020	3,199	3,330
Nuclear Counterterrorism & Incident Response	4,020	3,199	3,330
Total Pantex Plant	**12,140**	**16,199**	**14,848**
Princeton Plasma Physics Laboratory			
Proliferation Detection R&D	424	285	312
Defense Nuclear Nonproliferation R&D	424	285	312
Total Princeton Plasma Physics Laboratory	**424**	**285**	**312**
Richland Operations Office			
Counterterrorism and Counterproliferation	1,916	1,822	2,206
Nuclear Counterterrorism & Incident Response	1,916	1,822	2,206
Total Richland Operations Office	**1,916**	**1,822**	**2,206**
Sandia National Laboratories			
Reactor Conversion and Uranium Supply	775	775	1,250
Plutonium Disposition	1,250	1,250	400
Material Management and Minimization	2,025	2,025	1,650
International Nuclear Security	10,559	24,296	24,297
Radiological Security	42,123	47,173	47,173
Nuclear Smuggling Detection and Deterrence	17,259	15,535	16,467
Global Material Security	69,941	87,004	87,937

DEPARTMENT OF ENERGY
Funding by Site
TAS_0309 - Defense Nuclear Nonproliferation - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Nonproliferation & Arms Control	16,606	16,500	13,210
Proliferation Detection R&D	43,006	37,108	40,606
Nuclear Detonation Detection	94,552	86,644	100,252
Forensics R&D	1,800	1,450	1,233
Nonproliferation Stewardship Program	450	175	174
Defense Nuclear Nonproliferation R&D	139,808	125,377	142,265
NNSA Bioassurance Program	5,100	5,100	0
Emergency Management (formerly Emergency Operations)	652	0	0
Counterterrorism and Counterproliferation	77,223	66,922	77,773
Nuclear Counterterrorism & Incident Response	77,875	66,922	77,773
Total Sandia National Laboratories	**311,355**	**302,928**	**322,835**
Savannah River National Laboratory			
Reactor Conversion and Uranium Supply	5,735	5,735	5,470
Nuclear Material Removal and Elimination	28,316	28,316	15,590
Plutonium Disposition	10,253	10,253	10,942
Material Management and Minimization	44,304	44,304	32,002
Nuclear Smuggling Detection and Deterrence	359	255	271
Global Material Security	359	255	271
Nonproliferation & Arms Control	11,103	11,000	7,309
Proliferation Detection R&D	18,590	13,352	14,611
Forensics R&D	2,300	1,650	1,403
Nonproliferation Stewardship Program	9,527	5,934	5,928
Defense Nuclear Nonproliferation R&D	30,417	20,936	21,942
Counterterrorism and Counterproliferation	231	200	0
Nuclear Counterterrorism & Incident Response	231	200	0
Total Savannah River National Laboratory	**86,414**	**76,695**	**61,524**
Savannah River Operations Office			
Nuclear Material Removal and Elimination	275	275	550
Plutonium Disposition	9,527	9,527	14,028
Material Management and Minimization	9,802	9,802	14,578
18-D-150, Surplus Plutonium Disposition Project, SRS	102	102	0
Nonproliferation Construction	102	102	0
Counterterrorism and Counterproliferation	234	222	398
Nuclear Counterterrorism & Incident Response	234	222	398
Total Savannah River Operations Office	**10,138**	**10,126**	**14,976**
Savannah River Site			
Nuclear Material Removal and Elimination	8,125	8,125	1,950
Plutonium Disposition	70,104	70,104	31,115
Material Management and Minimization	78,229	78,229	33,065
International Nuclear Security	22	642	642
Radiological Security	0	79	79
Global Material Security	22	721	721
18-D-150, Surplus Plutonium Disposition Project, SRS	70,078	70,078	40,000

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Funding by Site
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(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Nonproliferation Construction	70,078	70,078	40,000
Counterterrorism and Counterproliferation	2,533	2,560	4,895
Nuclear Counterterrorism & Incident Response	2,533	2,560	4,895
Total Savannah River Site	**150,862**	**151,588**	**78,681**
SLAC National Accelerator Laboratory			
Proliferation Detection R&D	1,125	1,034	1,131
Forensics R&D	275	275	234
Defense Nuclear Nonproliferation R&D	1,400	1,309	1,365
Total SLAC National Accelerator Laboratory	**1,400**	**1,309**	**1,365**
Thomas Jefferson National Accelerator Facility			
Radiological Security	0	92	92
Global Material Security	0	92	92
Proliferation Detection R&D	0	517	566
Defense Nuclear Nonproliferation R&D	0	517	566
Total Thomas Jefferson National Accelerator Facility	**0**	**609**	**658**
Washington Headquarters			
Reactor Conversion and Uranium Supply	47,929	47,929	23,309
Nuclear Material Removal and Elimination	773	773	0
Plutonium Disposition	3,100	3,100	0
Material Management and Minimization	51,802	51,802	23,309
International Nuclear Security	20,069	6,744	6,744
Radiological Security	3,169	8,277	8,277
Nuclear Smuggling Detection and Deterrence	2,415	9,136	9,684
Global Material Security	25,653	24,157	24,705
Nonproliferation & Arms Control	20,295	15,738	12,189
Proliferation Detection R&D	15,296	32,000	24,679
Nuclear Detonation Detection	2,925	5,620	6,500
Nonproliferation Fuels Development	260	260	0
Forensics R&D	1,445	3,550	3,017
Nonproliferation Stewardship Program	2,007	5,202	5,196
Defense Nuclear Nonproliferation R&D	21,933	46,632	39,392
NNSA Bioassurance Program	305	305	0
18-D-150, Surplus Plutonium Disposition Project, SRS	1,584	1,584	0
Nonproliferation Construction	1,584	1,584	0
Emergency Management (formerly Emergency Operations)	25,602	27,365	21,761
Counterterrorism and Counterproliferation	40,178	53,877	97,987
Nuclear Counterterrorism & Incident Response	65,780	81,242	119,748
Total Washington Headquarters	**187,352**	**221,460**	**219,343**
Waste Isolation Pilot Plant			
Plutonium Disposition	16,150	16,150	14,536
Material Management and Minimization	16,150	16,150	14,536

DEPARTMENT OF ENERGY
Funding by Site
TAS_0309 - Defense Nuclear Nonproliferation - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Radiological Security	0	1,219	1,219
Global Material Security	0	1,219	1,219
Nonproliferation & Arms Control	267	250	340
Counterterrorism and Counterproliferation	67	0	0
Nuclear Counterterrorism & Incident Response	67	0	0
Total Waste Isolation Pilot Plant	**16,484**	**17,619**	**16,095**
Y-12 National Security Complex			
Reactor Conversion and Uranium Supply	27,823	27,823	26,265
Nuclear Material Removal and Elimination	6,569	6,569	3,250
Plutonium Disposition	2,292	2,292	300
Material Management and Minimization	36,684	36,684	29,815
International Nuclear Security	2,611	3,843	3,844
Radiological Security	16,510	11,965	11,965
Nuclear Smuggling Detection and Deterrence	1,896	2,041	2,163
Global Material Security	21,017	17,849	17,972
Nonproliferation & Arms Control	4,780	4,800	6,582
Proliferation Detection R&D	2,115	1,356	1,482
Forensics R&D	700	700	595
Nonproliferation Stewardship Program	1,575	1,745	1,743
Defense Nuclear Nonproliferation R&D	4,390	3,801	3,820
Counterterrorism and Counterproliferation	3,204	3,158	4,559
Nuclear Counterterrorism & Incident Response	3,204	3,158	4,559
Total Y-12 National Security Complex	**70,075**	**66,292**	**62,748**
Total Funding by Site for TAS_0309 - Defense Nuclear Nonproliferation	**2,613,048**	**2,613,048**	**2,532,108**

Naval Reactors

Naval Reactors

Naval Reactors[a]

($K)

FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted
2,081,445	2,081,445	2,118,773	+37,328

Proposed Appropriation Language

For Department of Energy expenses necessary for Naval Reactors' activities to carry out the Department of Energy Organization Act (42 U.S.C. 7101 et seq.), including the acquisition (by purchase, condemnation, construction, or otherwise) of real property, plant, and capital equipment, facilities, and facility expansion, $2,118,773,000 to remain available until expended: *Provided*, that $62,848,000 shall be available until September 30, 2026 for program direction.

Mission

The Naval Reactors' request of $2,118,773,000 in FY 2025 is for continued achievement of its core objective of ensuring the safe and reliable operation of the Nation's nuclear fleet. Naval Reactors' request supports continued reinvestment in advanced technology development, modernization of infrastructure, and remediation of environmental liabilities.

Overview

The Naval Reactors' (NR) appropriation is responsible for U.S. Navy nuclear propulsion work, beginning with reactor plant technology development and design, continuing through reactor plant operation and maintenance, and ending with final disposition of naval spent nuclear fuel. The program ensures the safe and reliable operation of reactor plants in nuclear-powered submarines and aircraft carriers (constituting over 40% of the Navy's major combatants)[b] and fulfills the Navy's requirements for new nuclear propulsion plants that meet current and future national defense requirements.

Naval Reactors' mission includes ensuring the safety of reactors and associated naval nuclear propulsion plants, and control of radiation and radioactivity associated with naval nuclear propulsion activities, including prescribing and enforcing standards and regulations for these areas, as they affect the environment, safety and health of workers, operators, and the general public. Naval Reactors maintains oversight in areas such as security, nuclear safeguards and transportation, radiological controls, public information, procurement, logistics, and fiscal management.

As part of the National Nuclear Security Administration (NNSA), Naval Reactors is working to provide the U.S. Navy with nuclear propulsion plants that are capable of responding to the challenges of the 21st-century security environment.

Major Outyear Priorities and Assumptions

The outyear funding (FY 2026 through FY 2029) for Naval Reactors is $9,133,836,000. Outyear funding supports Naval Reactors' core mission of providing proper maintenance and safety oversight, and addressing emergent operational issues and technology obsolescence for 98 reactor plants. This includes 67 submarines, 11 aircraft carriers, and 5 research, development, and training platforms (including the land-based prototypes). Outyear funding also supports Naval Reactors' continued achievement of ongoing new plant design projects, as well as continued achievement of its legacy responsibilities, such as ensuring proper management of naval spent nuclear fuel, prudent recapitalization of aging facilities, and cleanup of environmental liabilities.

Department of Energy (DOE) Working Capital Fund (WCF) Support

The Naval Reactors' appropriation projected contribution to the DOE WCF for FY 2025 is $1,487,000. This funding covers certain shared enterprise activities including managing enterprise-wide systems and data, telecommunications, and supporting the integrated acquisition environment.

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[a] Throughout this document, funding does not reflect the mandated transfer of $99.75 million in FY 2023 to the Office of Nuclear Energy and the inclusion of the mandated transfer in the calculation of the rate of operations for FY 2024 for operation of the Advanced Test Reactor.

[b] Major combatants, in this instance, include aircraft carriers, submarines, and surface combatants based on the "Active in Commission" column from the Naval Vessel Register.

Rickover Fellowship Program
Naval Reactors manages the fellowship to attract and develop technical leaders in the areas of reactor technology and design as it pertains to naval nuclear propulsion. Naval Reactors anticipates spending $1,450,000 in FY 2025 to support this program.

Naval Reactors Funding

($K)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted ($)	FY 2025 Request vs FY 2023 Enacted (%)
Naval Reactors					
Naval Reactors Operations and Infrastructure	668,802	668,802	763,263	+94,461	14.1%
Naval Reactors Development	746,000	746,000	868,380	+122,380	16.4%
S8G Prototype Refueling	20,000	20,000	0	-20,000	-100.0%
Columbia-Class Reactor Systems Development	53,900	53,900	45,610	-8,290	-15.4%
Program Direction	58,525	58,525	62,848	+4,323	7.4%
Construction	534,218	534,218	378,672	-155,546	-29.1%
Total, Naval Reactors	**2,081,445**	**2,081,445**	**2,118,773**	**+37,328**	**1.8%**

Outyears for Naval Reactors Funding

($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Naval Reactors				
Naval Reactors Operations and Infrastructure	772,510	766,305	864,080	929,746
Naval Reactors Development	891,951	945,370	950,620	1,024,074
S8G Prototype Refueling	0	0	0	0
Columbia-Class Reactor Systems Development	35,300	29,700	0	0
Program Direction	65,990	69,290	72,754	76,392
Construction	445,968	448,299	419,487	326,000
Total, Naval Reactors	**2,211,719**	**2,258,964**	**2,306,941**	**2,356,212**

Naval Reactors Funding

($K)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted ($)	FY 2025 Request vs FY 2023 Enacted (%)
Naval Reactors					
Naval Reactors Operations and Infrastructure					
Research Reactor Facility Operations & Maintenance	77,107	77,107	84,200	+7,093	9.2%
MARF Defueling and Layup	49,900	49,900	102,500	+52,600	105.4%
Laboratory Facility Regulation, Compliance, & Protection	157,415	157,415	169,681	+12,266	7.8%
Nuclear Spent Fuel Management	140,200	140,200	188,800	+48,600	34.7%
Radiological/Environmental Remediation & Demolition	118,800	118,800	127,424	+8,624	7.3%
Technical Infrastructure Operations Support	18,000	18,000	21,000	+3,000	16.7%
Capital Equipment	18,300	18,300	14,100	-4,200	-23.0%
Minor Construction	89,080	89,080	55,558	-33,522	-37.6%
Total, Naval Reactors Operations and Infrastructure	**668,802**	**668,802**	**763,263**	**+94,461**	**14.1%**
Naval Reactors Development					
Ship Construction & Maintenance Support	35,600	35,600	39,000	+3,400	9.6%
Nuclear Reactor Technology	246,150	246,150	297,850	+51,700	21.0%
Reactor Systems & Component Technology	319,198	319,198	370,180	+50,982	16.0%
Advanced Test Reactor Operations	99,747	99,747	94,750	-4,997	-5.0%
Capital Equipment	28,005	28,005	19,200	-8,805	-31.4%
Future Advanced Submarine Technology	17,300	17,300	47,400	+30,100	174.0%
Total, Naval Reactors Development	**746,000**	**746,000**	**868,380**	**+122,380**	**16.4%**
S8G Prototype Refueling	**20,000**	**20,000**	**0**	**-20,000**	**-100%**
Columbia-Class Reactor Systems Development	**53,900**	**53,900**	**45,610**	**-8,290**	**-15.4%**
Program Direction	**58,525**	**58,525**	**62,848**	**+4,323**	**7.4%**
Construction	**534,218**	**534,218**	**378,672**	**-155,546**	**-29.1%**
Total, Naval Reactors	**2,081,445**	**2,081,445**	**2,118,773**	**+37,328**	**1.8%**

Outyears for Naval Reactors Funding

	($K)			
	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Naval Reactors				
Naval Reactors Operations and Infrastructure				
Research Reactor Facility Operations & Maintenance	103,000	109,200	144,000	170,300
MARF Defueling and Layup	40,000	0	0	0
Laboratory Facility Regulation, Compliance, & Protection	178,036	182,630	194,828	200,750
Nuclear Spent Fuel Management	190,197	220,900	254,810	270,000
Radiological/Environmental Remediation & Demolition	135,686	143,934	159,842	173,849
Technical Infrastructure Operations Support	21,600	18,100	20,700	21,100
Capital Equipment	15,200	1,800	100	300
Minor Construction	88,791	89,741	89,800	93,447
Total, Naval Reactors Operations and Infrastructure	**772,510**	**766,305**	**864,080**	**929,746**
Naval Reactors Development				
Ship Construction & Maintenance Support	40,400	44,000	49,300	49,700
Nuclear Reactor Technology	300,691	308,550	283,050	289,000
Reactor Systems & Component Technology	371,220	379,150	359,930	394,217
Advanced Test Reactor Operations	96,740	98,770	100,840	102,957
Capital Equipment	22,600	26,200	20,400	16,900
Future Advanced Submarine Technology	60,300	88,700	137,100	171,300
Total, Naval Reactors Development	**891,951**	**945,370**	**950,620**	**1,024,074**
S8G Prototype Refueling	**-**	**-**	**-**	**-**
Columbia-Class Reactor Systems Development	**35,300**	**29,700**	**-**	**-**
Program Direction	**65,990**	**69,290**	**72,754**	**76,392**
Construction	**445,968**	**448,299**	**419,487**	**326,000**
Total, Naval Reactors	**2,211,719**	**2,258,964**	**2,306,941**	**2,356,212**

Naval Reactors
Explanation of Major Changes

Naval Reactors	FY 2025 Request vs FY 2023 Enacted
Naval Reactors Operations and Infrastructure: This increase (+14.1%) supports initiating the defueling and inactivation of the Modifications and Additions to Reactor Facilities (MARF) prototype, progression toward achieving remediation goals in decontamination and decommissioning, continued recapitalization of infrastructure, and increasing efforts to prepare for delivery of the Naval Spent Fuel Handling Facility.	+94,461
Naval Reactors Development: This increase (+16.4%) supports development of the methods, models, materials, components, and systems required for future platforms to achieve enhanced capability, improved affordability, and sustained reliability, and provides continuous support to U.S. Navy fleet operations.	+122,380
S8G-Prototype Refueling Overhaul: This decrease (-100%) is consistent with the project's planned funding profile and completion.	-20,000
***Columbia*-class Reactor Systems Development:** This decrease (-15.4%) is consistent with the project's planned funding profile and supports FY 2025 production, analysis, and testing execution.	-8,290
Program Direction: This increase (+7.4%) provides for personnel and pay related costs, travel requirements, and IT hardware and maintenance operations.	+4,323
Construction: This decrease (-29.1%) reflects the needs of the Program's construction portfolio, with increases for two new starts in FY 2025, offset by the assumed use of carryover for continuing execution of the Spent Fuel Handling Recapitalization Project.	-155,546
Total, Naval Reactors	**+37,328**

Naval Reactors
Naval Reactors Operations and Infrastructure

Description

The Naval Reactors Operations and Infrastructure resources ensure Naval Reactors maintains an integrated and effective enterprise across program sites located in Pennsylvania, New York, and Idaho, to provide safe and environmentally conscious operation of the nuclear fleet. The Naval Reactors Operations and Infrastructure program resources provide funding for work associated with the operation of one land-based nuclear prototype and lay-up of one land-based nuclear prototype at the Kesselring Site located in West Milton, NY; two dedicated, government-owned, contractor-operated laboratory facilities, Knolls and Bettis located in Niskayuna, NY and West Mifflin, PA, respectively; and naval spent nuclear fuel handling facilities and operations at the Naval Reactors Facility at the Idaho National Laboratory in Idaho. These resources fund work that ensures unique Naval Reactors' infrastructure and advanced naval nuclear capabilities are maintained well into the future. These efforts include:

1. Operation, maintenance, and lay-up of the DOE land-based nuclear prototypes supporting technology development and nuclear operator training.
2. Planning and preparations to defuel the Modifications and Additions to Reactor Facilities (MARF) prototype and perform the necessary work to leave the plant in a benign condition for eventual disassembly.
3. Activities to ensure Naval Reactors program operations meet or exceed applicable federal, state, and local standards and requirements.
4. Disposition of naval spent nuclear fuel from the inactivation and refueling of ships.
5. Remediation, dismantlement, and disposal of inactive Naval Reactors program systems, facilities, and areas.
6. Providing technical infrastructure support at laboratory facilities enabling technical work supporting the operations of the fleet as well as design and development efforts.
7. Design and procurement of capital equipment.
8. Design and construction of facilities and infrastructure to provide for capacity, security, safety, environmental, and obsolescence needs.

<u>Research Reactor Facility Operations & Maintenance</u>

The mission of this subprogram is to support one land-based prototype located at the Kesselring Site in New York through the following work efforts: (1) Test and examine reactor materials, components, systems, and new design applications under actual operating conditions. (2) Provide a ship-like operating platform to train nuclear operators. (3) Support improved design activities for the operating prototype and perform systematic preventive maintenance, corrective maintenance, upgrades, and modifications on the prototype and support equipment. (4) Evaluate problems using engineering tests and other troubleshooting techniques. (5) Procure and maintain adequate spare parts, material, specialized tools, and instrumentation for troubleshooting and prototype testing.

<u>MARF Defueling and Layup</u>

The mission of this subprogram is to defuel and lay up the MARF prototype, in order to place the plant in a safe and benign condition, for eventual dismantlement and off-site disposal. The requested funds permit: (1) Design and construction of defueling facilities, (2) Preparation and staging of required equipment for defueling, and (3) Training for and execution of defueling activities.

<u>Laboratory Facility Regulation, Compliance & Protection</u>

The mission of this subprogram is to ensure that Naval Reactors operations and design activities meet or exceed applicable federal, state, and local standards and requirements, such as Radiological Controls, Environmental, Safety and Health, Quality Assurance, and Nuclear Materials Management. This compliance is accomplished by: (1) Personnel training, instruction, supervision, independent oversight, and formal auditing. (2) Extensive personnel and environmental sampling and monitoring programs to ensure operations have no discernible impact on human health or the environment. (3) Preparing and issuing numerous reports required by federal, state, and local regulations and requirements. (4) Reviewing of new and existing nuclear plant designs and the related procurement of nuclear fuel and new project equipment. Naval Reactors' workforce is a highly trained group, capable of responding in the event of an accident, as well as supporting routine operations. Funding is also provided for contractor fixed services that support Naval Reactors operations on

laboratory facilities (e.g. network infrastructure) and the integrated nature of Naval Reactors and the Naval Nuclear Laboratory (NNL).

Nuclear Spent Fuel Management

The mission of this subprogram is to fulfill Naval Reactors' cradle-to-grave responsibility for all aspects of naval nuclear propulsion by properly managing naval spent nuclear fuel. Specifically, resources in this subprogram support the safe reception, handling, preparation, packaging, examination, and temporary storage of naval spent nuclear fuel coming from the nuclear-powered fleet and prototypes. This includes fuel handling operations at Department of Energy facilities, mechanically processing naval spent nuclear fuel at the Naval Reactors Facility (NRF) in the State of Idaho, packaging the naval spent nuclear fuel for dry storage in a geologic repository or interim storage facility, and disposing of the radiological waste by-products produced by these processes. The subprogram also supports nuclear-powered warship deployments by managing Naval Reactors naval spent nuclear fuel shipping container capacity for aircraft carrier and submarine refueling overhauls and defueling inactivation operations; conducts destructive and non-destructive examinations of expended naval cores and irradiated test specimens from the Advanced Test Reactor located at the Idaho National Laboratory; and manages the construction of projects that directly support improvements to the naval spent nuclear fuel receiving, processing, packaging, and disposal efforts, reducing radiological risks at the NRF.

Radiological/Environmental Remediation & Demolition

The mission of this subprogram is to remediate, dismantle, and dispose of inactive Naval Reactors systems, facilities, and areas that once supported research and development, design, testing, training, and prototype operations. Requirements are prioritized based on a criteria model that ensures currently available funding is provided to projects most critical to Naval Reactors with emphasis on balancing factors such as risk reduction and inactive facility lifecycle costs.

Technical Infrastructure and Operations Support

The mission of this subprogram is to support laboratory and testing facilities at NNL to enable the technical work supporting the operations of the naval nuclear fleet, as well as engineering and development efforts required to ensure continued performance, safety and reliability, and resolution of emergent fleet problems. This includes the preparation and maintenance of infrastructure at program laboratory sites (e.g., laboratory space/building, test loops, hot cells) to support Program technical work (e.g., testing, engineering and analysis, design, and examinations). The up-front work needed to prepare laboratory facilities is distinct from operating the systems or test programs within such facilities (e.g., actual execution/performance of the test once a test loop has been prepared). Technical infrastructure such as test loops are large in size and require significant infrastructure (e.g., building dimensions, utilities, and design safety calculations support in order to prepare the tests for safe operations.). The skills required to engineer and maintain technical infrastructure are similar to the skills used to support general facility infrastructure (e.g., general office buildings), and test engineers work collaboratively with site facilities engineers to maintain safe and reliable test operation.

Capital Equipment

The mission of this subprogram is to provide the critical technical tools and equipment to ensure that Naval Reactors can achieve its mission. This subprogram includes MIE (major items of equipment) and non-MIE. Capital equipment is defined as non-construction related equipment, computer systems, tooling, and furniture or fixtures having useful life of two or more years and costing greater than $500,000. The tools and equipment are required to support the other work efforts within the sub-categories of Naval Reactors Operations and Infrastructure (e.g. operator training and facilities maintenance).

Minor Construction Projects

The mission of this subprogram is to execute minor construction projects of a general nature, the Total Estimated Cost of which may not exceed the established minor construction threshold. Minor construction projects are necessary to adapt facilities to new or improved production techniques, to effect economies of operations, and to reduce or eliminate health, fire, and security vulnerabilities. These projects provide for design and construction, additions, and improvements to land, buildings, and utility systems, and they may include construction of new buildings, recapitalizing utilities and infrastructure, and general area improvements. Funding is derived from established site construction plans and may be used for emergent and unforeseen infrastructure needs.

Highlights and Major Changes in the FY 2025 Budget Request
The increase of $94,461,000 over FY 2023 Enacted levels supports the execution of defueling and inactivation of the MARF prototype, progression toward achieving remediation goals in decontamination and decommissioning, continued recapitalization of infrastructure, and increasing efforts to prepare for delivery of the Naval Spent Fuel Handling Facility.

FY 2026-FY 2029 Key Milestones
Research Reactor Facility Operations and Maintenance

- Obtain core depletion data from the land-based prototype to validate designs and methods of current operating fleet cores, and other core technologies for future Navy platforms.
- Conduct core test programs and evaluations on the land-based prototype to validate current and future fleet core designs/methods as well as prototype reactor core performance. This data and the depletion data in the prior bullet enable accurate prediction of the behavior of reactors through their service lives, which is used to provide flexibility in Navy operations, assess potential reactor service life extensions, and assure reactor safety.
- Perform maintenance on the land-based prototype to ensure continued safe operation of the 45-year old reactor plant.
- Conduct testing of electronic power generation and conversion units deployed in the fleet and provide a test bed for software and hardware upgrades prior to fleet deployment to ensure that problems with new technologies and designs are resolved before broader application and do not affect the deployed nuclear fleet.
- Develop technology for future fleet deployment with the use of chemistry automation testing that provides improved data and reduced time and exposure requirements for future fleet application.
- Operate and maintain Engineered Safety Features System.
- Return land-based prototype to normal periodic maintenance schedule to maximize availability for design, testing, and operations in support of existing and new technologies.

MARF Defueling and Layup
- Complete plant layup and defueling activities.
- Disestablishment of radiological containments and work areas post defueling.
- Place prototype in caretaking status.
- Perform Ion Exchanger Capacity test to obtain data on purification performance, which will improve service life predictions for the submarine fleet.
- Cleanup and shipment of radioactive material.

Laboratory Facility Regulation, Compliance & Protection
- Administer radiological controls, including radiological monitoring, radiological engineering, radiation health, radiological controls training, and auditing.
- Provide regulatory compliance oversight and auditing in environmental programs, environmental monitoring, safety, and industrial hygiene.
- Operate mixed, hazardous, and radiological waste storage and processing facilities.
- Prepare waste shipment for treatment or disposal.
- Develop tools and training for organizations to apply Program quality of work principles, quality system requirements, and NR program standards to NNL work.
- Perform internal audits and inspections of NNL work.
- Provide oversight of suppliers for NNL procurements.
- Establish and maintain policies and procedures for nuclear material control and accountability and nuclear criticality safety.
- Sustain regulatory and compliance programs and project support at all Naval Reactors sites.

Nuclear Spent Fuel Management
- Package spent fuel canisters of naval spent nuclear fuel into dry storage to support an agreement with the State of Idaho for naval spent nuclear fuel located in water pool storage for a period less than six years.
- Mechanically process naval spent nuclear fuel modules for placement into dry storage to support legal requirements in the agreement with the State of Idaho.

- Load baskets of naval spent nuclear fuel for Packaging Method A disposal to support legal requirements in the agreement with the State of Idaho.
- Load sleeves of naval spent nuclear fuel for Packaging Method B disposal to support legal requirements in the agreement with the State of Idaho.
- Receive, unload, and return for next use or ultimate disposal, shipping containers of naval spent nuclear fuel to support aircraft carrier and submarine refuelings/defuelings and inactivation operations.
- Deliver processing and packaging hardware, fuel handling equipment, and fuel handling procedures in support of naval spent nuclear fuel processing and dry storage packaging campaigns.
- Train personnel and check out equipment/procedures for commencement of operations in the Naval Spent Fuel Handling (NSFH) Facility.

Radiological/Environmental Remediation & Demolition

All sites:

- Conduct stabilization and remediation of inactive Naval Reactors Program contaminated systems, facilities, and areas to reduce potential environmental liabilities and prepare for future major demolition.
- Continue execution of NNL, Naval Reactors, and Department of Energy-Environmental Management (DOE-EM) collaborative tasks that support facility turnover to DOE-EM, including but not limited to site walkdowns, project scoping, project schedules, establishment of supporting infrastructure, utility re-routes, historical preservation, and environmental evaluations.

Bettis Laboratory (BL):

- Complete multiple waste load-out campaigns in the Materials Evaluation Laboratory.
- Execute decontamination and decommissioning (D&D) of the CY Building and Butler Building #1.
- Initiate D&D of the CX Building.

Naval Reactors Facility (NRF):

- Complete D&D of the A1W Prototype Complex.
- Commence dismantlement of the S5G Prototype.
- Continue planning and preparations for ECF D&D.

Knolls Laboratory (KL):

- Continue environmental remediation to support United States EPA and New York State Department of Environmental Conservation (NYSDEC) initiatives for Solid Waste Management Units (SWMUs) and Area of Concerns (AOCs) identified, in accordance with NYSDEC approved Corrective Action work schedules.
- Complete the remediation of asbestos in numerous radiologically controlled spaces throughout the site.
- Complete capping of the Knolls Laboratory Land Disposal Area and prepare required regulatory reports.
- Complete F Complex demolition.
- Commence D&D of Lower-Level facilities and A Complex.

Kesselring Site (KS):

- Complete D&D of multiple legacy industrial facilities in the southeast quadrant of the site.
- Commence D&D of Hortonsphere complex.
- Commence D&D of the MARF Prototype.

Technical Infrastructure and Operations Support

- Continue to consolidate laboratory workforce efforts to complete Knolls, Bettis corrosion testing consolidation by FY 2031, which will add efficiencies and reduce future costs for the program.
- Provide engineering for the transition of thermal-hydraulic testing operations from existing laboratories at the Knolls and Bettis sites into the Bettis Component Test Complex for consolidation of thermal-hydraulic testing.
- Design, procure, assemble, execute, and complete thermal fluids tests that provide unique data from advanced experimental technologies to remove excess conservatism and reduce uncertainty in reactor design thermal methods.
- Complete RML Hot Cell 5 Refurbishment and Install High Radiation (Scanning Electron Microscope) SEM into Hot Cell 5.
- Complete refurbishment of RML Hot Cells 11, 12 to maintain capability of destructive examination of irradiated material.

Capital Equipment

- Laboratory network upgrades that replace network infrastructure which provides basic connectivity for every IT system used in the Naval Reactors Program. Nearly every enterprise application, database, file repository, website, etc. is connected through this network infrastructure.
- M-140 Crane procurement at NRF.
- M-140 Visual Inspection Platform upgrades to provide high-resolution underwater imaging capability to support receipt inspection and detailed visual examination of core components.

Minor Construction Projects

- BL Classified Islands
- BL Craft Facility
- BL Security Facility
- KL RML Building Envelope
- KL RML HVAC
- KL Classified Islands
- KS Radio Upgrade
- KS Classified Islands
- NRF Classified Islands
- NRF Expended Core Facility (ECF) Electric Heat Conversion
- NRF Utility Expansion Northeast
- NRF Integrated Electric Heat Conversion
- NRF Transporter Path

FY 2023 Accomplishments

- Completed KS site facility work necessary to support MARF defueling availability.
- Packaged 4 spent fuel canisters into dry storage to support meeting time requirements in an agreement with the State of Idaho for NSNF located in water pool storage.
- Mechanically processed 74 NSNF modules for placement into dry storage to support legal requirements in the agreement with the State of Idaho.
- Received, unloaded, and returned for next use or ultimate disposal 5 shipping containers of NSNF to support aircraft carrier and submarine refuelings/defuelings and inactivation operations.
- Performed corrosion and environmental degradation testing of primary plant materials in normal and off-nominal environments supporting emergent fleet issues, material development efforts, and computational material models development efforts.
- Completed KS D1G Prototype Dismantlement project, initiated NRF A1W Complex D&D, and established a DOE-EM field office at Bettis.
- Completed the following minor construction projects: BL AT-Building Upgrades, BL J Building Cryo Tank Replacement, BL Firehouse, BL Soil Repository Parking, KL Legacy Eliminating Office Building, KL CCF Long Term Upgrades, KS Building 76 Renovation, KS Site Service Water and Sanitary System Upgrade, KS Building 19 HVAC, NRF D&D Supporting Infrastructure, NRF Fire Protection Upgrade, NRF Fire Water Upgrade, NRF Storm Sewer Upgrade, NRF Backup Power Upgrade, NRF Northeast Area Boundary.

Description
The Naval Reactors Development (NRD) resources fund work that ensures the current and future fleet is the most advanced, well-maintained, and capable nuclear fleet in the world. This funding supports unique technologies used in naval reactors that are crucial to delivering superior navy fleet operations and dominance in the maritime domain to counter the increasing threats from our adversaries. These efforts include:

1. Supporting naval operations while ensuring reactor safety by providing technical support to the fleet, engineering solutions to emergent reactor plant issues, enabling equipment replacement and maintenance, and tracking reactor performance over time.
2. Developing and enhancing the fundamental methods, modeling, and materials used in reactor cores and plants, which reduce lifecycle costs and improves performance and reactor safety.
3. Designing and maintaining the major reactor plant components and plant systems required for technologically superior naval nuclear propulsion.
4. Providing funding for the operation of the Advanced Test Reactor (ATR) to DOE Office of Nuclear Energy and performing irradiation testing for ongoing evaluation of new material applications and core designs.
5. Designing and procuring capital equipment in support of the work above.
6. Supporting development of technologies specifically targeted for implementation in the next propulsion plant design and sustainment of associated critical design skills.

<u>Ship Construction & Maintenance Support</u>
The mission of this subcategory is to directly support both the operation and new construction of the nuclear-powered fleet. Operating reactors require engineering support throughout their lifetimes to address any issues that arise, incorporate new technology, assess the effect of actual Navy operations compared to assumed operations when the reactors were designed, and to account for new information learned over the decades that ship class will operate. This engineering support is required to ensure safe operation throughout the life of the reactor plant. While overall fleet support efforts are funded across all Naval Reactors Development subprograms (excluding the Advanced Test Reactor), SCMS supports direct efforts. Examples of direct SCMS efforts include analyses to extend the reactor operational life of a ship, reactor servicing technical support, new instrumentation and control system qualification prior to ship installation, emergent problem resolution arising during propulsion plant component manufacturing, installation, testing or operation, and continued technical validation of a ship's reactor performance and safety basis through operational life of the ship. Also, maintenance of the reactor plants involves designing equipment and systems to safely handle new fuel and highly radioactive spent fuel, including safely maintaining plant components and resolving obsolescence issues. These efforts are closely associated with the more comprehensive technology efforts that underpin Naval Reactor's fleet support efforts in Nuclear Reactor Technology (NRT) and Reactor Systems & Component Technology (RSCT).

<u>Nuclear Reactor Technology</u>
The mission of this subcategory is to develop and deploy reactor core material systems that improve nuclear safety, stealth, tactical ability, and reactor plant capability and performance; and to support the qualification and the manufacture of those systems at the naval nuclear core vendor. The materials testing executed using NRT resources forms the basis for naval nuclear reactor operational capability, which has enabled over 65 years of safe nuclear reactor operations while increasing reactor plant performance and reducing platform lifecycle cost. This research and development capability informs new design decisions and enables timely response to issues encountered in the operating fleet. Advanced fuel and poison development efforts, including specimen manufacture, irradiation testing, and post irradiation examination, are executed using resources from this subcategory. Lastly, this subcategory supports the examination of expended fuel modules and irradiated core components at the Expended Core Facility located at the Naval Reactors Facility, which is part of the Idaho National Laboratory. This examination capability provides real performance data on hardware to ultimately understand both long-term material behavior and design impacts.

Reactor Systems & Component Technology
The mission of this subcategory is to provide Naval Reactors with the technology for major reactor plant components (e.g., reactors, steam generators, reactor coolant pumps, valves) as well as plant systems (e.g., instrumentation and control). This subcategory provides the support and expertise necessary to ensure the satisfactory operation of reactor plant components in the naval nuclear fleet and prototypes, to design and implement *Virginia*-class, *Ford*-class, *Columbia*-class, and future generation reactor plant components, and to develop higher power density, faster to build, and more affordable components for technology insertion applications in existing ship classes. Funding within this subcategory supports the major objectives of instrumentation and control component and system development to deliver the next generation of instrumentation and control, and electrical equipment for naval nuclear propulsion applications to improve ship mission capabilities, reactor safety, and widen the advanced technology gap over our adversaries. This subcategory also enables the Program's advanced technology incubator effort to accelerate the pace of R&D that holds promise for step-change advancements and asymmetrical warfighting advantages for naval nuclear propulsion.

Advanced Test Reactor Operations
The mission of this subcategory is to provide base operations funding for the Advanced Test Reactor. The Advanced Test Reactor is the only domestic platform that provides a prototypical thermal irradiation environment to support core design, manufacturing development, fleet support, and analytical model development for reactor materials and nuclear fuels. The ATR is located on the Idaho National laboratory (INL) and is owned by the DOE Office of Nuclear Energy and operated by the INL contractor. Naval Reactors has sole use of five of nine ATR test loops. This subprogram provides the majority of the ATR's base operations funding.

Capital Equipment
The mission of this subcategory is to provide the critical technical tools and equipment to ensure that Naval Reactors can achieve its technology missions. This subprogram includes both MIE (major items of equipment) and non-MIE. Capital equipment is defined as non-construction related equipment, computer systems, tooling, and furniture or fixtures having a useful life of two or more years and costing greater than $500,000. The tools and equipment are required to support other work efforts within the subcategories of Naval Reactors Development (e.g., designing and testing of reactor plant systems, developing new technologies).

Future Advanced Submarine Technology
The mission of this subcategory is to directly support the technological development and sustainment of associated critical design skills necessary to execute a new propulsion plant design and implement matured technologies. A supplementary data sheet within this document captures information for this new subcategory within Naval Reactors Development.

Highlights and Major Changes in the FY 2025 Budget Request
The increase of $122,380,000 over FY 2023 Enacted levels supports development of the methods, models, materials, components, and systems required for future platforms to achieve enhanced capability, improved affordability, and sustained reliability and provides continuous support to U.S. Navy fleet operations. Recent increases in this area of NR's budget come at a pivotal time for the NR Program, in which over the last decade, the need for generational investment in infrastructure, which is not yet complete, required a reduction in mid- to long- term technology development efforts. During this time, historic technology development efforts were leveraged to support *Columbia*-class design and existing nuclear-powered submarines and aircraft carriers in the fleet. To account for deferred technology R&D to support infrastructure investments, Naval Reactors must identify and develop cutting-edge technologies to aggressively improve propulsion plant capability and dramatically reduce design, acquisition, and lifecycle cost and timespans. This investment in R&D is a critical step in maintaining the Navy's dominance in the maritime domain.

FY 2026-FY 2029 Key Milestones
Ship Construction & Maintenance Support
- Validate reactor performance and safety basis through operational life of *Los Angeles*-class, *Ohio*-class, *Virginia*-class, *Seawolf*-class, *Nimitz*-Class, and *Ford*-class ships.
- Perform thermal and mechanical analyses to extend the reactor and propulsion plant operational life of the submarine fleet and carrier fleet, ensuring the overall number of nuclear ships continues to meet strategic requirements. This includes service life extension work for the *Los Angeles*-class, *Ohio*-class, and *Nimitz*-class.

- Perform integrated reactor plant analysis and instrumentation and control system qualification prior to ship installation to ensure safe and reliable operation.
- Support resolution of fabrication or shipyard issues for reactor equipment in production.
- Support emergent obsolescence management issues of technology and equipment pertaining to construction and maintenance support.
- Provide technical support *for Los Angeles*-class, *Ohio*-class, *Virginia*-class, *Seawolf*-class, *Nimitz*-Class, *Ford*-class, and *Columbia*-class reactor plant system operations and resolve reactor plant or equipment problems and requests from shipyards.

Nuclear Reactor Technology

- Support manufacture of the first *Columbia*-class reactor core and continued manufacture of *Virginia*-class and *Ford*-class reactor cores.
- Deliver Electro-Discharge Machining (EDM) equipment as a modern replacement for Expended Core Facility underwater milling equipment for fuel separation. EDM will provide more inherent safety features and more efficient, automated processing capability.
- Perform core examinations on structural and fuel materials of a land-based prototype core informing operating Fleet performance and new design decisions.
- Operate, upgrade, and maintain material testing and examination capabilities. These capabilities enable maintaining reactor plant safety for new materials and manufacturing deviations and allows for minimum impact to ship's operating availability.
- Execute vendor manufacturing development necessary to scale up improvements in fuel and core manufacturing to increase yields, increase efficiency, and reduce cost. This requires the scale-up of laboratory-designed specialized equipment and processes to industrial scale at production facilities.
- Complete core physics exams in operating ships to confirm reactor operating lifetime performance.
- Complete 60% of conceptual design for long-term continuity of expended core testing and examination capabilities. Examination of naval spent cores is critical to validating the safe operation of cores in the fleet, resolving technical issues, refining analytical models, and establishing spent fuel shipping requirements.

Reactor Systems & Component Technology

- Develop predictive methodologies and data analytics for evaluation of in-service components in order to reduce lifecycle costs (e.g., reduce total planned nuclear maintenance workload of the fleet by 30%), optimally schedule repairs and thereby increase operational availability.
- Develop and implement advanced instrumentation & control systems exploiting passive cooling, enhanced cyber-security features, and increased computational capability for fleet applications to increase performance and reduce acquisition and lifecycle costs.
- Research, develop, and test new sensor technologies for integration into existing and future propulsion plants in order to better enable predictive maintenance, and improve accuracy and plant responsiveness, increased sensor density (e.g., more sensing elements per instrument), thereby enhancing operator-assisted control systems and operational reliability.
- Develop and integrate technologies (e.g., advanced power conversion equipment) to improve shipboard power density and efficiency, enabling more capable and compact systems (e.g., reducing electrical component cabinet volume by up to 50%), and thereby reducing weight and hull size impacts.
- Develop and qualify advanced manufacturing capabilities, such as powder metallurgy hot isostatic pressing (PM-HIP) and additive manufacturing (AM), to manufacture components for near-term operating platform insertions. These manufacturing technologies reduce cost and production timespan, improve resilience of the industrial base by allowing more vendors to compete, and enable novel component geometries that can improve the performance of nuclear reactor plants.
- Design, build, test, and qualify improved heat exchangers for reactor plant application, with the goal of increasing power density to enhance capability, lower cost, and reduce ship weight and hull size impacts.
- Complete qualification of advanced materials to retire existing material risks in the aging fleet, to improve design of future platforms, and to eliminate ship operational constraints due to material concerns.
- Complete a physically-based material modeling program to improve operational availability, decrease maintenance burden, and optimize performance of plant components.

- Establish external technology incubation sources to identify relevant emergent technologies (e.g., artificial intelligence, advanced robotics, energy storage) that potentially provide a step-change in naval nuclear plant competitive advantage.
- Develop, improve, and employ reactor design, analysis, and simulation software tools for new plants to improve capability while reducing cost and development time.
- Develop radiation shield methods and perform analyses for reactor plants, and radioactive material handling equipment and facilities supporting capability and affordability improvements for ship designs and reduced maintenance schedule and cost.
- Provide structural analyses and assessments for new designs and existing fleet to ensure propulsion continuity and safe operation under battle shock and ship maneuvering transients.
- Perform testing and analysis of noise sources in components and develop new technologies to improve propulsion plant acoustics and submarine stealth.
- Continue to monitor and redesign components and integrated systems as necessary to remove future emergent obsolescence issues.

Advanced Test Reactor Operations

- Perform operations, maintenance, and engineering support work necessary to restore ATR operation to the target of 210 days per year (three 60-day irradiation test cycles and up to two transient tests). These test cycles are necessary to obtain data to define performance limits of fuel fabricated from existing fuel manufacturing technologies and support continued safe reactor operations.
- Safely handle, ship, and receive 14 irradiation test trains per year from the Naval Reactors Facility where irradiations test specimens are assembled and examined. This work is necessary as part of preparing new Navy test specimens for the ATR and inspecting and characterizing specimens that have been irradiated.
- Procure nuclear fuel and spare parts to support ATR operations.
- Refurbish the components and infrastructure to bring a currently unusable ATR test loop back into service. This refurbishment will allow test conditions that support advanced fuel system development and will enable subsequent refurbishment of other operating test loop equipment and infrastructure to improve ATR reliability. The funding for the first refurbishment is categorized under Nuclear Reactor Technology.

Capital Equipment

- Procure High Performance Computing equipment to enable design and analysis workload to be completed at a much lower cost than physical tests.
- Procure, design, and install three steam-water test loops (TH1/2/3) for thermal and hydraulic testing, delivering three loops with new technologies into a state-of-the-art facility, consolidating thermal hydraulic testing into one location.
- Procure a state-of-the-art metal Additive Manufacturing machine to support continued development of AM and enable rapid design iteration of pre-production components.
- Recapitalize X-Ray Computed Tomography / Micro Focus System at the Kesselring Site.

FY 2023 Accomplishments

- Supported continued safe and reliable operation of reactors across the fleet via core design and analysis efforts.
- Performed and coordinated expended core examinations. These examinations determined performance of actual operating naval cores.
- Initiated non-destructive physics exams of prototype fuel.
- Continued development of new manufacturing processes (PM-HIP and AM), executing targeted material testing to validate key performance attributes in a shorter time than prior material qualification efforts.
- Progressed development of the next generation reactor fuel system at both the laboratory and core vendor, including demonstrating feasibility of the manufacturing process concept and designing the Pilot Line for fueled process development at the core vendor. This challenging technology program is progressing ahead of schedule.
- Accelerated the Program's advanced technology innovation effort to develop technologies that enable a step-change in competitive advantage for naval nuclear propulsion plants Invested in advanced components, manufacturing and material preparation methods, and plant monitoring technologies expected to significantly improve performance and availability.

- Performed operations, maintenance, and engineering support work for the ATR to complete Core Internals Changeout, a once-per-decade maintenance effort.
- Safely shipped and received four Naval Reactors program irradiation test trains.
- Continued operational and test design changes to increase the total specimen test throughput for the NR Irradiations Test Program, which utilizes the ATR, to support fleet material and advanced fuel development.
- Continued development and testing of radiation analysis automation tools and shield design processes to reduce reactor plant shield design effort for future reactor plant shield designs enabling reductions in radiation analysis costs for fleet support requests and reactor servicing evolutions for all naval reactor plants.
- Advanced the development of state-of-the-art repair technologies including Induction Heating Stress Improvement in-situ component replacement, pressurized system welding, and additive processes such as cold spray.

Naval Reactors
Future Advanced Submarine Technology

Description

Since the commissioning of USS Nautilus in 1954, Naval Reactors has demonstrated the superior ability to design and deliver militarily effective naval nuclear propulsion plants to counter global threats, maintaining maritime superiority and an undersea advantage over our adversaries. Naval Reactors' investment in technology and critical design expertise for the next generation of submarine designs is essential to ensure maritime superiority is maintained into the future. Sustained investment in reactor plant technologies is required for agile response to Navy demands for increased capabilities as the global threat environment and adversary capabilities evolve. Unlike for previous submarine design efforts, mature technologies are not currently available to support capability needs. Future Advanced Submarine Technology (FAST) encompasses Naval Reactors investment in technology and critical design expertise to support design of the propulsion plant for the Navy's next generation attack submarine.

FAST resources directly support the propulsion plant design for the next generation of attack submarine (SSN(X)) as driven by the timeline and capability goals set by the Navy. A gap analysis of the current fleet has identified the need for 1) greater speed, 2) increased payload capacity, 3) improved acoustics, and 4) increased operational availability. Technology development is required to close these gaps. Work within FAST is synchronized with Navy timelines for development of the next generation attack submarine. The FAST-funded design work includes reactor plant concept and detail design, core concept design, reactor plant instrumentation and control design, reactor plant configuration, reactor coolant pump design, and applications of matured acoustics technology. Naval Reactors requests $47,400,000 for this effort in FY 2025 to support current Navy timelines.

In addition to preparing for and executing the next generation attack submarine design, FAST resources maintain critical design skills that are not frequently exercised in support of existing classes and would be difficult to reconstitute if lost. Historically, these skills, such as core design and reactor plant system design, were exercised and maintained through the relatively frequent design of propulsion plants for new or existing prototypes and ship classes. In recent years, these skills have been underutilized due to the 20-year gap between submarine propulsion plant designs (Columbia-class and SSN(X)). The current budget maintains these critical design skills; however, a further delay would still require a majority of FAST resources to be used to prevent atrophy and preserve the ability to later execute the SSN(X) and other future designs.

In contrast with Naval Reactors' base technology development efforts, FAST contains resources required to design a new propulsion plant and implement matured technologies. After design start (notionally scheduled for FY 2028), this line contains all resources required to execute the anticipated SSN(X) design.

Highlights and Major Changes in the FY 2025 Budget Request

The increase of $30,100,000 supports FY 2025 continued prototyping and testing, initiation of concept design for reactor plant components and systems, and reactor plant arrangement studies.

Naval Reactors
Columbia-class Reactor Systems Development

Description

Ohio-class ballistic missile submarines (SSBNs) have been the backbone of the Nation's sea-based strategic deterrent since the early 1980s. Recapitalization of this strategic asset is required as the *Ohio* Class retires. With the *Columbia* Class, the Navy plans to maintain its sea-based strategic deterrent force with a class of 12 ships, two fewer than today's *Ohio* Class, due in part to a life-of-ship-core. This new life-of-ship core will eliminate the need for mid-life reactor refuelings (mid-life refueling overhauls are an over-three-year evolution during which the ship is unavailable for service). By increasing class operational availability, development of a new reactor plant for the *Columbia* Class will permit 12 *Columbia*-class submarines to do the work of 14 *Ohio*-class submarines–an operational and sustainment savings of over $40 billion over the life of the class.

Research, development, and design for the *Columbia*-class SSBN began in FY 2010. The new design will leverage *Virginia*-class technology, as well as manufacturing development and demonstration efforts being performed as part of the land-based S8G Prototype Refueling Overhaul program. NR must design a new reactor plant to meet the Navy's required capabilities, maximize operational availability, and reduce acquisition and lifecycle costs. The DOE reactor plant design and development work for the *Columbia* will continue in FY 2023 and beyond to include oversight of the manufacture of lead ship reactor plant components, including the core, and conduct the requisite safety analysis for the lead ship reactor plant.

Work to support the *Columbia*-class SSBN is tightly synchronized with Navy-funded propulsion plant work. The DOE-funded design work includes reactor plant component design and development, core design analysis and manufacturing development, reactor plant instrumentation and control design and development, reactor plant configuration, reactor systems development and integration, and reactor performance, analysis, and validation. Lead submarine construction began in FY 2021. NR requests $45,610,000 for this effort in FY 2025.

Highlights and Major Changes in the FY 2025 Budget Request

The decrease of $8,290,000 is consistent with the project's planned funding profile and supports FY 2025 production, oversight analysis, and testing execution.

Naval Reactors
Program Direction

Description

Due to the essential nature of nuclear reactor work, Naval Reactors provides centrally controlled, technical management of program operations. Federal employees directly oversee and set policies and procedures for developing new reactor plants, operating existing reactor plants, facilities supporting these plants, contractors, and the Bettis and Knolls Atomic Power Laboratories. In addition, these employees interface with other DOE offices and local, state, and Federal regulatory agencies.

Naval Reactors' Federal employees are typically recruited from a community of highly trained military engineers who have completed a rigorous five-year on-the-job training program unique to Naval Reactors. This training program has groomed engineers with skill sets far beyond that of nuclear engineers found in the commercial and Federal sectors.

Travel funds are used to perform oversight activities of facilities located worldwide that require comprehensive audits and in-person visits to ensure compliance and safety. Additionally, Naval Reactors Representative positions at the field sites (to include locations in the United Kingdom, Japan, Hawaii, and the continental United States) rotate periodically due to retirements, attrition, and succession planning.

Other Related Expenses includes the maintenance of Naval Reactors' IT hardware, engineering software, working capital funding, and related licenses supporting mission-essential technical work. Additionally, these funds will support planned upgrades and maintenance of video teleconferencing equipment, security investigations of Federal personnel, and training requirements.

Highlights and Major Changes in the FY 2025 Budget Request

The increase of $4,323,000 over the FY 2023 Enacted levels includes general increases for personnel and pay related costs and IT hardware and maintenance. Additionally, NR will continue to reshape the workforce to manage knowledge transfer to ensure the accomplishment of the NR mission.

FY 2026-FY 2029 Key Milestones

- Naval Reactors plans to continue developing its highly technical workforce to ensure the Naval Reactors mission is preserved well into the future. Out year increases in full time equivalents (FTEs) supports next generation attack submarine program design start.

FY 2023 Accomplishments

- Provided for all facets of administrative control and oversight of the Naval Nuclear Propulsion Program ("Naval Reactors").

Naval Reactors
Program Direction Funding

	($K)				
	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted ($)	FY 2025 Request vs FY 2023 Enacted (%)
Naval Reactors					
Headquarters					
Salaries and Benefits	37,517	37,517	42,332	+4,812	12.8%
Travel	471	471	493	+22	4.7%
Other Related Expenses	3,746	3,746	2,573	-1,173	-31.3%
Total, Headquarters	**41,734**	**41,734**	**45,398**	**+3,661**	**8.8%**
Naval Reactors Laboratory Field Office					
Salaries and Benefits	14,871	14,871	16,019	+1,148	7.7%
Travel	314	314	329	+15	4.8%
Other Related Expenses	1,606	1,606	1,102	-504	-31.4%
Total, Naval Reactors Laboratory Field Office	**16,791**	**16,791**	**17,450**	**+659**	**3.9%**
Total Program Direction					
Salaries and Benefits	52,388	52,388	58,351	+5,963	11.4%
Travel	785	785	822	+37	4.7%
Other Related Expenses	5,352	5,352	3,675	-1,677	-31.3%
Total, Program Direction	**58,525**	**58,525**	**62,848**	**+4,323**	**7.4%**
Planned Federal FTEs	**246**	**246**	**246**	**246**	**246**

Naval Reactors
Outyears Program Direction

	($K)			
	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request
Naval Reactors				
Headquarters				
Salaries and Benefits	44,138	44,379	46,923	49,598
Travel	505	517	530	543
Other Related Expenses	3,037	4,976	5,011	5,048
Total, Headquarters	**47,680**	**49,872**	**52,464**	**55,189**
Naval Reactors Laboratory Field Office				
Salaries and Benefits	16,672	16,939	17,789	18,678
Travel	337	345	353	362
Other Related Expenses	1,301	2,134	2,148	2,163
Total, Naval Reactors Laboratory Field Office	**18,310**	**19,418**	**20,290**	**21,203**
Total Program Direction				
Salaries and Benefits	60,810	61,318	64,712	68,276
Travel	842	862	883	905
Other Related Expenses	4,338	7,110	7,159	7,211
Total, Program Direction	**65,990**	**69,290**	**72,754**	**76,392**
Planned Federal FTEs	**246**	**246**	**252**	**252**

Naval Reactors
Program Direction - Other Related Expenses

Other Related Expenses	FY 2023 Enacted ($K)	FY 2024 Annualized CR ($K)	FY 2025 Request ($K)	FY 2025 Request vs FY 2023 Enacted ($)	FY 2025 Request vs FY 2023 Enacted (%)
Transportation	740	740	495	-245	-33.1%
Communications, Utilities and Miscellaneous Charges	405	405	143	-262	-64.7%
Other Services from Federal Sources	1,107	1,107	675	-432	-39.0%
Advisory and Assistance Services	16	16	16	-0	-0.6%
Operation and Maintenance of Facilities	238	238	163	-75	-31.6%
Operations and Maintenance of Equipment	260	260	181	-79	-30.3%
Supplies and Materials	209	209	83	-126	-60.2%
Equipment	423	423	432	+9	2.1%
Working Capital Fund	1,955	1,955	1,487	-468	-24.0%
Total, Other Related Expenses	**5,352**	**5,352**	**3,675**	**-1,677**	**-31.3%**

Outyears Program Direction - Other Related Expenses

Other Related Expenses	FY 2026 Request ($K)	FY 2027 Request ($K)	FY 2028 Request ($K)	FY 2029 Request ($K)
Transportation	563	910	952	910
Communications, Utilities and Miscellaneous Charges	165	268	284	273
Other Services from Federal Sources	762	1,293	1,358	1,418
Advisory and Assistance Services	18	29	30	29
Operation and Maintenance of Facilities	187	305	323	312
Operations and Maintenance of Equipment	208	339	358	346
Supplies and Materials	95	154	161	154
Equipment	635	1,040	769	956
Working Capital Fund	1,705	2,772	2,924	2,813
Total, Other Related Expenses	**4,338**	**7,110**	**7,159**	**7,211**

Program Direction
Activities and Explanation of Changes

FY 2023 Enacted	FY 2025 Request	Explanation of Changes FY 2025 Request vs FY 2023 Enacted
Salaries and Benefits **$52,388,000**	**Salaries and Benefits** **$58,351,000**	**Salaries and Benefits** **+$5,963,000**
• Federal salaries and benefits for employees that directly oversee and set policies and procedures for developing new reactor plants, operating existing reactor plants, facilities supporting these plants, contractors, and the Bettis and Knolls Atomic Power Laboratories.	• Federal salaries and benefits for employees that directly oversee and set policies and procedures for developing new reactor plants, operating existing reactor plants, facilities supporting these plants, contractors, and the Bettis and Knolls Atomic Power Laboratories.	• Reflects an increase for personnel and pay related costs as well as anticipated costs of benefits.
Travel **$785,000**	**Travel** **$822,000**	**Travel** **+$37,000**
• Perform oversight activities of facilities located worldwide that require comprehensive audits and in-person visits to ensure compliance and safety. • Rotation of Naval Reactors Representatives at the field sites (U.K., Japan, Hawaii, and the continental United States) due to retirement, attrition, and succession planning.	• Performed oversight activities of facilities located worldwide that require comprehensive audits and in-person visits to ensure compliance and safety. • Rotation of Naval Reactors Representatives at the field sites (U.K., Japan, Hawaii, and the continental United States) due to retirement, attrition, and succession planning.	• Increase reflects expected increase in travel requirement to execute oversight activities.
Other Related Expenses **$5,352,000**	**Other Related Expenses** **$3,675,000**	**Other Related Expenses** **-$1,677,000**
• Maintenance of Naval Reactors' IT hardware, engineering software, and related licenses supporting mission essential technical work. • Support planned upgrades and maintenance of video teleconferencing equipment, security investigation of Federal personnel, and training requirements.	• Maintenance of Naval Reactors' IT hardware, engineering software, and related licenses supporting mission essential technical work. • Supported planned upgrades and maintenance of video teleconferencing equipment, security investigation of Federal personnel, and training requirements.	• Decrease reflects updated PCS costs, and updated utilities and miscellaneous charges to support IT and maintenance operations compared to FY 2023 levels.

Naval Reactors
Capital Equipment Summary

($K)

	Total	Prior Years	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 vs FY 2023 ($)
Capital Equipment (> $500K)						
Total Non-MIE Capital Equipment (TEC <$10M)	N/A	N/A	14,200	12,900	20,890	+6,690
Consolidated Steam Water Test Loops, BL	41,015	0	15,505	0	12,410	-3,095
A1G Buffering Lead Canisters, NRF	16,600	0	16,600	0	0	-16,600
M-140 Cranes, Naval Spent Fuel Handling Facility	15,000	0	0	0	0	+0
Total, Capital Equipment	**N/A**	**N/A**	**46,305**	**12,900**	**33,300**	**-13,005**

Outyears Capital Equipment Summary

($K)

	FY 2026 Request	FY 2027 Request	FY 2028 Request	FY 2029 Request	Outyears
Capital Equipment (> $500K)					
Total Non-MIE Capital Equipment (TEC <$10M)	22,800	14,900	20,500	17,200	N/A
Consolidated Steam Water Test Loops, BL	0	13,100	0	0	0
M-140 Cranes, Naval Spent Fuel Handling Facility	15,000	0	0	0	0
Total, Capital Equipment	**37,800**	**28,000**	**20,500**	**17,200**	**N/A**

Research and Development

The Office of Management and Budget (OMB) Circular No. A-11, "Preparation, Submission, and Execution of the Budget," requires the reporting of research and development (R&D) data. Consistent with this requirement, Naval Reactors R&D activities funded by NNSA are displayed below.

($K)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 Request	FY 2025 Request vs FY 2023 Enacted ($)	FY 2025 Request vs FY 2023 Enacted (%)
Research and Development (R&D)					
Basic	0	0	0	+0	0%
Applied	141,400	137,000	123,200	-18,200	-12.9%
Development	700,073	719,825	776,488	+76,415	+10.9%
Subtotal, R&D	**841,473**	**856,825**	**899,688**	**+58,215**	+6.9%
Equipment	23,005	8,800	19,200	-3,805	-16.5%
Construction	554,218	199,300	337,002	-217,216	-39.2%
Total, R&D	**1,418,696**	**1,064,925**	**1,255,890**	**-162,806**	-11.5%

25-D-530, Naval Examination Acquisition Project
Naval Reactors Facility, Idaho
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2025 request for 25-D-530, Naval Examination Acquisition Project (NEAP), is $45,000,000 to begin the detailed (preliminary & final) design phase. Critical Decision (CD)-0, *Approve Mission Need*, was approved on January 3, 2018, and CD-1, *Approve Alternative Selection and Cost Range*, is planned for FY 2025. A draft Analysis of Alternatives has been completed with a preferred alternative to build a new facility. An early conceptual design of a new facility was completed in FY 2021, and refinement of the conceptual design is in progress. The cost range established with CD-0 of $500,000,000 to $1,266,000,000 (FY 2018 dollars, not including escalation) based on rough-order of magnitude estimates will be updated at CD-1. The current concept is estimated to cost $3,018,860,000 (then-year dollars), largely reflecting escalation from constant FY 2018 dollars. The management reserve and government contingency included in the cost estimate provides approximately 80% confidence in the project cost. The cost and schedule will be baselined with CD-2/3, *Performance Baseline and Start of Construction*.

Significant Changes

This Construction Project Data Sheet (CPDS) is the initial issue of the Naval Examination Acquisition Project CPDS. This CPDS includes a new start of a Major System Project. The Naval Examination Acquisition Project is in the Alternative Selection and Conceptual Design phase, therefore some areas of this CPDS are under development. Other Project Costs (OPCs) are funded out of the Naval Reactors Development funding.

A Federal Project Manager (FPM) has been assigned to this project.

Critical Milestone History

The schedule below represents an estimate and not a performance baseline, which will be developed in support of CD-2.

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-3A	Final Design Complete	CD-2/3	D&D Complete[a]	CD-4
FY 2025	01/03/2018	2Q FY 2024	2Q FY 2025	3Q FY 2028	4Q FY 2029	2Q FY 2030	n/a	4Q FY 2035

CD-0 – Approve Mission Need
Conceptual Design Complete – Actual date the conceptual design was completed
CD-1 – Approve Alternate Selection and Cost Range
Final Design Complete – Actual date the facility design was completed
CD-3A – Approve Long Lead Procurement and Site Preparation
CD-2/3 – Approve Performance Baseline and Start of Construction
CD-4 – Approve Project Completion

Project Cost History ($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2025	524,200	2,351,160	2,875,360	143,500	n/a	143,500	3,018,860

[a] D&D of the Expended Core Facility is not within the scope of this project.

2. Project Scope and Justification

Scope

The Naval Examination Acquisition Project will recapitalize the capabilities for examining spent nuclear fuel that currently exists in the Expended Core Facility and its support facilities. The Project considered alternatives, including constructing a new facility on the Idaho National Laboratory and refurbishing the existing Naval Reactors examination infrastructure at the Expended Core Facility. The draft Analysis of Alternatives identifies the preferred alternative is to construct a new facility.

The following represents the general scope of the Naval Examination Acquisition Project:

- Design and construct a facility and facility systems to examine naval spent nuclear fuel, poison, and structural materials, including the capability to receive, unload, prepare, and package examination specimens.
- Design and construct infrastructure needed to support examination of naval spent nuclear fuel, poison, and structural material.
- Design and procure equipment to make the facility ready for use to receive, unload, prepare, and package examination specimens of naval spent nuclear fuel, poison, and structural material.
- Prepare testing, operating, and preventive maintenance procedures and drawings, where appropriate, for the naval spent nuclear fuel examination process systems, equipment, facilities, and facility systems.
- Develop training programs and conduct personnel training, where appropriate.
- Develop project management procedures and manage Project activities.
- Provide support services needed for the Project.
- Manage subcontracts supporting the design and construction or refurbishment.
- Prepare an Environmental Assessment in accordance with the National Environmental Policy Act.

Justification

Naval Reactors is responsible for providing the nation with safe, effective, and affordable naval nuclear propulsion plants and ensuring their continued safe and reliable operation through lifetime support, research and development, design, construction, specification, certification, testing, maintenance, and disposal. Naval Reactors maintains total responsibility for all aspects of the U.S. Navy's nuclear propulsion systems. To support the continued operation of nuclear-powered vessels, it is critical that Naval Reactors maintain the capability to demonstrate acceptable operation of existing core designs, as well as to investigate and analyze unexpected conditions found during ship operation or upon refueling or defueling nuclear-powered vessels. To deliver cores with the capability required to support new weapons systems and operational capabilities in naval combatants, Naval Reactors must continue to design new and more capable reactors using the data obtained from examinations.

The Naval Reactors Facility, located on the Idaho National Laboratory, serves as the Naval Reactors focal point for the evaluation, preparation, and shipment of naval spent nuclear fuel. Operations in the Expended Core Facility include processing of highly radioactive naval spent nuclear fuel in water pools and non-destructive and destructive examinations of naval spent nuclear fuel samples in hot cells. Although the existing Expended Core Facility continues to be maintained and operated in a safe and environmentally responsible manner, the infrastructure is over 60 years old, does not meet current standards (i.e., requirements that were not applicable at the time of construction such as modern structural and seismic codes) and requires recapitalization.

The existing Expended Core Facility at the Naval Reactors Facility in Idaho is a single facility that is approximately 197,000 square feet. The Expended Core Facility has three major capabilities: (1) to receive, unload, prepare for packaging, and package naval spent nuclear fuel, (2) to prepare for examination and examine naval spent nuclear fuel, and (3) to prepare and examine irradiation test specimens from the Advanced Test Reactor. To cease operations in the aging Expended Core Facility, a three-part exit strategy is required to recapitalize the three distinct missions provided by the facility today. First, the Spent Fuel Handling Recapitalization Project (14-D-901) is constructing the Naval Spent Fuel Handling Facility to recapitalize the capabilities to receive, unload, prepare, and package naval spent nuclear fuel. Second, the Naval Examination Acquisition Project (25-D-530) is recapitalizing the capabilities to examine naval spent nuclear fuel. Lastly, the capability to prepare and examine irradiation test specimens will be recapitalized by separate efforts.

The Naval Examination Acquisition Project plans to conduct an Environmental Assessment to consider the environmental impacts of the proposed alternative in accordance with the National Environmental Policy Act. The NEAP environmental analysis will rely on analysis from the Final EIS for Recapitalization of Infrastructure Supporting Naval Spent Nuclear Fuel Handling at the Idaho National Laboratory to the extent the previous analysis remains current and is applicable to NEAP construction and operations.

Naval Reactors has an equivalency to the project management requirements in DOE Order 413.3, *Program and Project Management for the Acquisition of Capital Assets*. The Naval Examination Acquisition Project is being conducted in accordance with the Naval Reactors Implementation Bulletin for DOE O 413.3, and appropriate project management requirements have been met.

Key Performance Parameters (KPPs)
KPPs will be established as part of Critical Decision – 2/3, *Performance Baseline and Start of Construction*

3. Financial Schedule ($K)

	Budget Authority (Appropriations)	Obligations[a]	Costs[a]
Total Estimated Cost (TEC)			
Design			
FY 2025	45,000	45,000	20,644
FY 2026	90,000	90,000	50,167
FY 2027	75,000	75,000	93,227
FY 2028	75,000	75,000	103,322
FY 2029	85,000	85,000	62,820
FY 2030	85,000	85,000	48,839
FY 2031	30,000	30,000	42,654
FY 2032	25,000	25,000	39,435
FY 2033	14,200	14,200	30,993
FY 2034	0	0	20,550
FY 2035	0	0	11,548
FY 2036	0	0	0
Total Design	**524,200**	**524,200**	**524,200**
Construction			
FY 2025	0	0	0
FY 2026	0	0	0
FY 2027	35,000	35,000	30,170
FY 2028	50,000	50,000	34,322
FY 2029	115,000	115,000	113,491
FY 2030	500,000	500,000	289,560
FY 2031	600,000	600,000	370,925
FY 2032	550,000	550,000	445,155
FY 2033	300,200	300,200	343,735

[a] Totals may not add due to rounding.

	Budget Authority (Appropriations)	Obligations	Costs
FY 2034	150,000	150,000	297,160
FY 2035	50,960	50,960	176,549
FY 2036	0	0	93
Total Construction	**2,351,160**	**2,101,160**	**2,101,160**
TEC			
FY 2025	45,000	45,000	20,644
FY 2026	90,000	90,000	50,167
FY 2027	110,000	110,000	123,397
FY 2028	125,000	125,000	137,644
FY 2029	200,000	200,000	176,311
FY 2030	585,000	585,000	338,399
FY 2031	630,000	630,000	413,579
FY 2032	575,000	575,000	484,591
FY 2033	314,400	314,400	374,728
FY 2034	150,000	150,000	317,710
FY 2035	50,960	50,960	188,097
FY 2036	0	0	93
Total TEC	**2,875,360**	**2,625,360[a]**	**2,625,360**

[a] Planned Obligations and Costs do not include $250M in Government Contingency in FY 2030, FY 2031, and FY 2032.

	Budget Authority (Appropriations)	Obligations[a]	Costs
Other Project Costs (OPC)			
FY 2018	2,500	2,500	2,500
FY 2019	5,800	5,800	5,800
FY 2020	10,500	10,500	10,500
FY 2021	11,700	11,700	11,700
FY 2022	14,600	14,600	14,600
FY 2023	21,300	21,300	21,300
FY 2024	24,400	24,400	24,400
FY 2025	12,700	12,700	12,700
FY 2026	1,400	1,400	1,400
FY 2027	900	900	900
FY 2028	1,100	1,100	1,100
FY 2029	600	600	600
FY 2030	4,500	4,500	4,500
FY 2031	7,500	7,500	7,500
FY 2032	7,000	7,000	7,000
FY 2033	8,300	8,300	8,300
FY 2034	4,100	4,100	4,100
FY 2035	1,000	1,000	1,000
FY 2036	3,600	3,600	3,600
Total, OPC	**143,500**	**143,500**	**143,500**
Total Project Costs (TPC)			
FY 2018	2,500	2,500	2,500
FY 2019	5,800	5,800	5,800
FY 2020	10,500	10,500	10,500
FY 2021	11,700	11,700	11,700
FY 2022	14,600	14,600	14,600
FY 2023	21,300	21,300	21,300
FY 2024	24,400	24,400	24,400
FY 2025	57,700	57,700	33,344
FY 2026	91,400	91,400	51,567
FY 2027	110,900	110,900	124,297
FY 2028	126,100	126,100	138,744
FY 2029	200,600	200,600	176,911
FY 2030	589,500	589,500	342,899
FY 2031	637,500	637,500	421,079
FY 2032	582,000	582,000	491,591

[a] Totals may not add due to rounding.

	Budget Authority (Appropriations)	Obligations[a]	Costs
FY 2033	322,700	322,700	383,028
FY 2034	154,100	154,100	321,810
FY 2035	51,960	51,960	189,097
FY 2036	3,600	3,600	3,693
Total TPC	**3,018,860**	**2,768,860**	**2,768,860**

[a] Totals may not add due to rounding.

4. Details of Project Cost Estimate ($K)

		Current Total Estimate[a]	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)				
Design				
	Design	368,971	N/A	N/A
	Management Reserve	155,229	N/A	N/A
Total Design		**524,200**	**N/A**	**N/A**
Construction				
	Site Work	67,710	N/A	N/A
	Equipment	195,985	N/A	N/A
	Facility Construction	1,173,885	N/A	N/A
	Safety	10,894		
	Management Reserve	652,685	N/A	N/A
	Government Contingency	250,000	N/A	N/A
Total Construction		**2,351,160**	**0**	**0**
Total Estimated Cost (TEC)		**2,875,360**	**N/A**	**N/A**
Management Reserve & Contingency, TEC		*1,057,914*	*N/A*	*N/A*
Other Project Costs (OPC)				
OPC except D&D				
	Conceptual Design	96,335	N/A	N/A
	NEPA	7,944	N/A	N/A
	Start-up	27,220	N/A	N/A
	Closeout	3,840	N/A	N/A
	Management Reserve	8,161	N/A	N/A
Total OPC		**143,500**	**N/A**	**N/A**
Management Reserve, OPC		*8,161*	*N/A*	*N/A*
Total Project Cost		**3,018,860**	**N/A**	**N/A**
Total Management Reserve & Contingency (TEC+OPC)		***1,066,075***	***N/A***	***N/A***

[a] Totals may not add due to rounding.

5. Schedule of Appropriation Requests

Request Year	Type	Prior Years	FY 2024	FY 2025	FY2026	FY2027	FY2028	FY2029	Out Years	Total
FY 2025	TEC	0	0	45,000	90,000	110,000	125,000	200,000	2,305,360	2,875,360
	OPC	66,400	24,400	12,700	1,400	900	1,100	600	36,000	143,500
	TPC	66,400	24,400	57,700	91,400	110,900	126,100	200,600	2,361,360	3,018,860

6. Related Operations and Maintenance Funding Requirements

Annual and lifecycle costs are under development in support of CD-1.

7. D&D Information

The new area being constructed in this project is replacing existing facilities. However, preparation and examination of irradiation test specimens in the existing Expended Core Facility will continue until that capability is recapitalized; therefore, the costs associated with D&D of the Expended Core Facility are not included in the costs cited for the Naval Examination Acquisition Project.

	Square Feet
New area being constructed by this Project at the Naval Reactors Facility	TBD
Area of D&D in this Project at the Naval Reactors Facility	0
Area at the Naval Reactors Facility to be transferred, sold, and/or D&D outside the project including area previously “banked”	0
Area of D&D in this Project at other sites	0

8. Acquisition Approach

The integrated Management & Operating (M&O) prime partners will plan and execute the Naval Examination Acquisition Project in accordance with requirements. Naval spent nuclear fuel examination equipment will be procured through the procurement M&O partners as appropriate. An Architecture / Engineering firm was selected as the subcontracting strategy for development of a conceptual design. The acquisition approach after conceptual design is under development.

22-D-532, KL Security Upgrades
Knolls Atomic Power Laboratory, Niskayuna, NY
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The KL Security Upgrades Project will construct a new Site Entrance Facility (SEF), renovate areas to enable modern security operations and Central Alarm Station (CAS) functionality, replace security perimeter lighting, and demolish 65-year-old buildings (A5 and Z1), which are currently used as the SEF and security operations functions. A Federal Project Manager has been assigned to this project.

The FY 2022 request for 22-D-532, KL Security Upgrade was $5,100,000 for construction design. The FY 2025 request for this project is $41,670,000 for construction of all project scope. The total estimate cost (TEC) was originally $31,800,000, approved at Critical Decision (CD) CD-0 on October 21, 2018, with a CD-4 of 4Q FY 2027. The CD-1 Total Estimated Cost (TEC) was approved on May 3, 2021, which updated the TEC to $46,770,000 and CD-4 of 4Q FY 2029 to accommodate additional scope of consolidating security operations and updated the TPC to $51,399,000. The project achieved CD-2 on 10/4/2023 and did not change the TEC or CD-4 estimate. The cost estimate is a Class 3, and the current budget supports the objective KPPs.

Significant Changes

Since requesting construction design funding in FY 2022, the project has added scope to consolidate security operations with the Central Alarm Station (CAS) and adjusted funding to accommodate realized and projected construction escalation. These changes have been incorporated in the approved performance baseline, resulting in a TEC increase of $14,970,000, an OPC increase of $2,593,000, and a two-year delay to the projected CD-4 date. Additionally, design contingency has been reduced due to the project nearing final design complete. The underrun in design will be used as construction contingency and was factored into the FY 2025 request for the project.

Critical Milestone History

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2022	10/21/2018	01/14/2021	3Q FY 2021	2Q FY 2023	2Q FY 2024	3Q FY 2024	N/A	4Q FY 2027
FY 2025	10/21/2018	01/14/2021	5/3/2021	10/4/2023	2Q FY 2024	3Q FY 2024	4Q FY 2028	4Q FY 2029

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range
Conceptual Design Complete – Actual date the conceptual design was completed (if applicable).
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
Final Design Complete – Estimated/Actual date the project design will be/was complete(d)
CD-3 – Approve Start of Construction
D&D Complete –Completion of D&D work
CD-4 – Approve Start of Operations or Project Complete

Project Cost History ($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC Total	OPC, Except D&D	OPC, D&D	OPC Total,	TPC
FY 2022	5,100	26,700	31,800	2,036	0	2,036	33,836
FY 2025	3,381	43,389	46,770	4,629	0	4,629	51,399

2. Project Scope and Justification

Scope

The KL Security Upgrade Project upgrades and modernizes the security perimeter of the Knolls site, including the perimeter security lighting, the site's Site Entrance Facility, and the Central Alarm Station. Additionally, the project consolidates security operations to increase the security organization's overall efficiency.

Site Entrance Facility (SEF): A new SEF (at least 2,500 square feet) will replace the functions of the existing SEF and provide additional space to process uncleared personnel, including media, interview, and drug testing rooms.

Security Operations and Central Alarm Station (CAS): The CAS will be relocated and security operations will be consolidated to enhance organizational efficiencies.

Security Lighting: The existing 2200V series lighting system will be recapitalized with modern and sustainable technology and expanded to meet security requirements.

Demolition: The project will demolish two 65-year-oldbuildings (A5 and Z1).

Justification

The SEF, CAS, and perimeter lighting are at the end of their useful life. The current SEF was constructed in 1960 and does not meet all applicable security requirements for a SEF (e.g., automated personnel ingress and egress requirements), and the current facility does not have enough available space to address vulnerabilities for Security Police Officers staffing the SEF. The CAS no longer provides the ability to effectively utilize the installed systems required for effective security monitoring of the site. The security perimeter lighting is one of the first lines of defense for the site and must be maintained in an effective configuration to meet current security standards and ensure robust protection against intrusion and infiltration. The perimeter lighting system is experiencing an increased rate of failure, which requires compensatory measures until the system can be restored.

Key Performance Parameters (KPPs)

Performance Measure	Threshold	Objective
Site Entrance Facility	Provide 2,500 square feet of space to ingress/egress site personnel.	Provide 5,000 square feet of space to ingress/egress of personnel and provide space to process unclear personnel, which includes interview rooms, a drug screening room, and a conference room.
Security Operations	Provide 1,300 square feet of space to recapitalize Security Operations functions, including the central alarm station.	Provide 2,000 square feet to recapitalize, collocated, and accommodate future expansion of Security Operations functions, including the central alarm station.
Site Lighting	Recapitalize site lighting system with modern lighting infrastructure.	Recapitalize and expand the site light system with 16 additional lighting poles.

3. Financial Schedule ($K)

	Budget Authority (Appropriations)	Obligations	Costs
Design			
FY 2022	3,381	2,198	275
FY 2023	0	595	1,332
FY 2024	0	588	1,774
FY 2025	0	0	0
Total Design	**3,381**	**3,381**	**3,381**
Construction			
FY 2025	43,389	32,291	5,438
FY 2026	0	1,149	9,775
FY 2027	0	1,149	9,746
FY 2028	0	1,149	8,556
FY 2029	0	7,651	8,874
FY 2030	0	0	0
Total Construction	**43,389**	**43,389**	**43,389**
TEC			
FY 2022	3,381	2,198	275
FY 2023	0	595	1,332
FY 2024	0	588	1,774
FY 2025	43,389	32,291	5,438
FY 2026	0	1,149	9,775
FY 2027	0	1,149	9,746
FY 2028	0	1,149	8,556
FY 2029	0	7,651	9,874
FY 2030	0	0	0
Total TEC	**46,770**	**46,770**	**46,770**

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Costs (OPC)			
FY 2020	825	825	618
FY 2021	0	0	206
FY 2022	280	280	280
FY 2023	330	330	357
FY 2024	488	488	488
FY 2025	2,074	2,074	1,168
FY 2026	220	220	618
FY 2027	172	172	248
FY 2028	140	140	268
FY 2029	100	100	378
FY 2030	0	0	0
Total, OPC	**4,629**	**4,629**	**4,629**
Total Project Costs (TPC)			
FY 2020	825	825	618
FY 2021	0	0	206
FY 2022	3,661	2,478	555
FY 2023	330	925	1,689
FY 2024	488	1,076	2,262
FY 2025	45,463	34,365	6,606
FY 2026	220	1,369	10,393
FY 2027	172	1,321	9,994
FY 2028	140	1,289	8,824
FY 2029	100	7,751	10,252
FY 2030	0	0	0
Total TPC	**51,399**	**51,399**	**51,399**

4. Details of Project Cost Estimate ($K)

		Current Total Estimate	Previous Total Estimate	Previous Validated Baseline
Total Estimated Cost (TEC)				
Design				
	Design	3,281	4,310	3,281
	Contingency	100	790	1,819
Total Design		**3,381**	**5,100**	**5,100**
Construction				
	Construction	35,670	22,800	35,670
	Equipment	0	0	0
	Contingency	7,719	3,900	6,000
Total Construction		**43,389**	**26,700**	**41,670**
Total Estimated Cost (TEC)		**46,770**	**31,800**	**46,770**
Contingency, TEC		*7,819*	*4,690*	*7,819*
Other Project Costs (OPC)				
OPC except D&D				
	OPC	2,794	2,036	2,794
	Contingency	1,052	0	1,052
D&D		783	0	783
Total OPC		**4,629**	**2,036**	**4,629**
Contingency, OPC		*1,052*	*0*	*1,052*
Total Project Cost		**51,399**	**33,836**	**51,399**
Total Contingency (TEC+OPC)		***8,871***	***4,690***	***8,871***

5. Schedule of Appropriations Requests ($K)

Request Year	Type	Prior Years	FY 2024	FY 2025	FY2026	FY2027	FY2028	Out Years	Total
FY 2022	TEC	5,100	0	26,700	0	0	0	0	31,800
	OPC	1,105	0	931	0	0	0	0	2,036
	TPC	5,925	0	27,911	0	0	0	0	33,836
FY 2025	TEC	5,100	0	41,670	0	0	0	0	46,770
	OPC	1,435	488	2,074	220	172	140	100	4,629
	TPC	6,535	488	43,744	220	172	140	100	51,399

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	4Q FY 2029
Expected Useful Life (number of years)	50 years
Expected Future Start of D&D of this capital asset (fiscal quarter)	4Q FY 2079

Related Funding Requirements ($M)

Funding Requirements	Annual Costs		Life Cycle Costs	
Estimate Totals	**Previous Estimate**	**Current Estimate**	**Previous Estimate**	**Current Estimate**
Operations and Maintenance	1.3	0.029	51.6	29.5

7. D&D Information

The new area being constructed is replacing existing facilities and the costs of D&D of the facilities that are replaced are included in the costs of this construction project.

	Square Feet
New area being constructed by this project at Knolls	5,000
Area of D&D in this project at Knolls	3,265
Area at Knolls to be transferred, sold, and/or D&D outside the project including area previously “banked”	1,735
Area of D&D in this project at other sites	N/A
Area at other sites to be transferred, sold, and/or D&D outside the project including area previously “banked”	N/A
Total area eliminated	5,000

8. Acquisition Approach

The KL Security Upgrade project is a Design-Bid-Build. The Naval Reactors prime contractor will administer the contract.

14-D-901, Spent Fuel Handling Recapitalization Project
Naval Reactors Facility, Idaho
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2025 Request for 14-D-901, Spent Fuel Handling Recapitalization Project is $292,002,000. The FY 2025 budget request will enable the project to continue permanent construction activities such as erection of structural steel, placement of the water pool concrete, and procurement/installation of the utility systems. Critical Decision (CD)-2/3, *Performance Baseline and Start of Permanent Construction*, was approved on September 24, 2018, with a TPC of $1,686,500,000 and a CD-4 of 3Q FY 2025. On October 31, 2019, a revision to the Performance Baseline was approved with a TPC of $2,060,000,000 and a CD-4 date of 3Q FY 2026. On July 13, 2021, a second revision to the Performance Baseline was approved with a TPC of $2,333,000,000 and a CD-4 date of 3Q FY 2026. On October 20, 2022, a third revision to the Performance Baseline was approved with a TPC of $3,000,000,000 and a CD-4 date of 4Q FY 2028. On September 8, 2023, an interim revision to the Performance Baseline was approved to extend the CD-4 date by 1 year to 4Q FY 2029; the associated cost estimate is currently under development and the TPC will be updated as part of a future Performance Baseline revision.

Funding within the project's line-item is controlled at the TPC level; funds are available to perform both TEC-type and OPC-type activities.

Significant Changes

This CPDS is an update of the FY 2024 CPDS and does not include a new start for the budget year.

The impacts from subcontractor delays and maturation of the schedule for future work involving concurrent construction activities by multiple subcontractors have extended project completion by 12 months from the timeline established in the October 2022 Performance Baseline revision. The primary driver for the extension—subcontractor delays—are the result of several factors such as continuing poor subcontractor performance, craft labor shortages, unexpected technical issues with the concrete mix, and unusually harsh weather conditions during the winter of 2023.

In addition, the procurement cycle for the project's last major construction subcontract is being extended after insufficient competition resulted in the inability to place that contract in 2023 as planned. Planning and executing a re-procurement of this subcontract with a modified acquisition approach to increase competition will result in a project delay, currently estimated to be within the 12-month schedule impact realized due to the construction delays. The re-procurement will also result in a cost increase for the project, though additional work on the re-procurement, including market engagement, is needed before a high-fidelity cost projection can be made.

At the end of FY 2023, the project transitioned from the first major phase of construction involving placement of the heavily reinforced concrete foundations to the next phase involving erection of the structural steel for the main process building and construction of the water pools. To continue progressing construction activities through this transition, the contracts for the structural steel erection and water pool construction subcontractors must be amended with new milestones reflecting the schedule delays realized since the October 2022 Performance Baseline revision. To ensure that these milestones are supported by the project completion milestones in the SFHP Performance Baseline, Naval Reactors approved an interim schedule-only revision to the Performance Baseline on September 8, 2023, that delayed CD-4 by 12 months. Costs for the extension resulted in a reduction to Project contingency, as reflected in this Construction Project Data Sheet, but no change to the Total Project Cost. The interim Performance Baseline revision allows construction to continue while the project matures the strategy and associated cost and schedule impacts from the re-procurement. The cost and schedule impacts from the re-procurement will be captured in a full Performance Baseline revision in early 2024. The project's outyear funding profile has been preliminarily adjusted in anticipation of the upcoming Performance Baseline revision and will be updated as necessary once the revision is approved.

Critical Milestone History

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2014	03/29/2008		1Q FY 2014	3Q FY 2015	4Q FY 2016	4Q FY 2016	N/A	4Q FY 2022
FY 2015	03/29/2008		1Q FY 2014	3Q FY 2015	4Q FY 2016	4Q FY 2016	N/A	4Q FY 2022
FY 2015 Rev	03/29/2008		1Q FY 2015	3Q FY 2017	4Q FY 2018	1Q FY 2018	N/A	4Q FY 2024
FY 2016	03/29/2008		2Q FY 2015	1Q FY 2018	4Q FY 2019	4Q FY 2018	N/A	3Q FY 2025
FY 2017	03/29/2008	03/19/2015	03/19/2015	1Q FY 2018	3Q FY 2020	4Q FY 2018	N/A	3Q FY 2025
FY 2018	03/29/2008	03/19/2015	03/19/2015	4Q FY 2018	3Q FY 2020	4Q FY 2018	N/A	3Q FY 2025
FY 2019	03/29/2008	03/19/2015	03/19/2015	4Q FY 2018	3Q FY 2020	4Q FY 2018	N/A	3Q FY 2025
FY 2020	03/29/2008	03/19/2015	03/19/2015	09/24/2018	3Q FY 2020	09/24/2018	N/A	3Q FY 2025
FY 2021	03/29/2008	03/19/2015	03/19/2015	09/24/2018	2Q FY 2021	09/24/2018	N/A	3Q FY 2026
FY 2022	03/29/2008	03/19/2015	03/19/2015	09/24/2018	03/04/2021	09/24/2018	N/A	3Q FY 2026
FY 2023	03/29/2008	03/19/2015	03/19/2015	09/24/2018	03/04/2021	09/24/2018	N/A	3Q FY 2026
FY 2024	03/29/2008	03/19/2015	03/19/2015	09/24/2018	03/04/2021	09/24/2018	N/A	4Q FY 2028
FY 2025	03/29/2008	03/19/2015	03/19/2015	09/24/2018	03/04/2021	09/24/2018	N/A	4Q FY 2029

CD-0 – Approve Mission Need
Conceptual Design Complete – Actual date the conceptual design was completed
CD-1 – Approve Alternate Selection and Cost Range
CD-2 – Approve Performance Baseline
Final Design Complete – Actual date the facility design was completed
CD-3 – Approve Start of Construction/Execution
D&D Complete – Completion of D&D work (see Section 5)
CD-4 – Approve Start of Operations or Project Completion

Fiscal Year	CD-3A	CD-3B	CD-4A
FY 2017	2Q FY 2017	1Q FY2018	3Q FY 2024
FY 2018	12/7/2016	4Q FY 2017	3Q FY 2024
FY 2019	12/7/2016	6/14/2017	3Q FY 2024
FY 2020	12/7/2016	6/14/2017	3Q FY 2024
FY 2021	12/7/2016	6/14/2017	3Q FY 2025
FY 2022	12/7/2016	6/14/2017	3Q FY 2025
FY 2023	12/7/2016	6/14/2017	3Q FY 2025
FY 2024	12/7/2016	6/14/2017	2Q FY 2027
FY 2025	12/7/2016	6/14/2017	2Q FY 2028

CD-3A – Start of Long Lead Material Procurement
CD-3B – Start of Early Site Preparation
CD-4A – Start of M-290 Shipping Container Unloading Operations

Project Cost History ($K)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2014	369,400	917,100	1,286,500	165,000	N/A	165,000	1,451,500
FY 2015	369,400	917,100	1,286,500	165,000	N/A	165,000	1,451,500
FY 2015 Rev	263,000	1,144,900	1,407,000	178,200	N/A	178,200	1,586,100
FY 2016	268,800	1,182,100	1,450,900	195,600	N/A	195,600	1,646,500
FY 2017	239,800	1,232,600	1,472,400	174,100	N/A	174,100	1,646,500
FY 2018	239,800	1,232,600	1,472,400	174,100	N/A	174,100	1,646,500
FY 2019	306,982	1,165,418	1,472,400	174,100	N/A	174,100	1,646,500
FY 2020	302,489	1,169,911	1,472,400	174,100	N/A	174,100	1,686,500
FY 2021	278,860	1,607,140	1,886,000	174,000	N/A	174,000	2,060,000
FY 2022	276,896	1,609,104	1,886,000	174,000	N/A	174,000	2,060,000
FY 2023	332,288	1,826,712	2,159,000	174,000	N/A	174,000	2,333,000
FY 2024	332,288	2,491,339	2,823,627	176,373	N/A	176,373	3,000,000
FY 2025	332,288	2,491,339	2,823,627	176,373	N/A	176,373	3,000,000

2. Project Scope and Justification

Scope

The Spent Fuel Handling Recapitalization Project will design and construct a new facility, the Naval Spent Fuel Handling Facility, to incorporate the capabilities for naval spent nuclear fuel handling that currently exist in the Expended Core Facility and its support facilities. Additionally, a major portion of this new facility is required to support additional capability, which does not exist in the Expended Core Facility, to handle full-length aircraft carrier naval spent nuclear fuel received in M-290 shipping containers. The Naval Spent Fuel Handling Facility footprint will be approximately 213,000 square feet. Of this, approximately 121,000 square feet is required for spent fuel shipping container and dry storage operations, which includes approximately 17,000 square feet for water pool spent fuel preparation and in-process storage. The remainder of the facility, approximately 92,000 square feet, is required for waste management, facility systems operations, staging, and administrative office space. The Spent Fuel Handling Recapitalization Project has completed final design and site preparation and is in the construction phase.

The following represents the general scope of the Spent Fuel Handling Recapitalization Project:

- Design and construct a facility and facility systems for naval spent nuclear fuel handling, including the capability to receive, unload, prepare, and package naval spent nuclear fuel.
- Design and construct infrastructure needed to support naval spent nuclear fuel handling operations.
- Design and procure equipment to make the facility ready for use to receive, unload, prepare, and package naval spent nuclear fuel, where appropriate.
- Provide the new capability to unload M-290 spent fuel shipping containers.
- Prepare testing, operating, and preventive maintenance procedures and drawings, where appropriate, for the naval spent nuclear fuel handling process systems, equipment, facilities, and facility systems.
- Develop training programs and conduct personnel training, where appropriate.
- Develop project management procedures and manage Project activities.
- Provide support services needed for the Project.
- Manage subcontracts supporting the design and construction.
- Prepare an Environmental Impact Statement in accordance with the National Environmental Policy Act.

Justification

The mission of Naval Reactors is to provide the nation with militarily effective nuclear propulsion plants and to ensure their safe, reliable, long-lived, and affordable operation. Naval Reactors maintains total responsibility for all aspects of the U.S. Navy's nuclear propulsion systems, including research, design, construction, testing, operation, maintenance, and disposal.

At the end of reactor service life, Naval Reactors transports naval spent nuclear fuel from its origin (e.g., servicing shipyards and naval training platforms) to the Naval Reactors Facility at the Idaho National Laboratory.

The Expended Core Facility, located at the Naval Reactors Facility in Idaho, is the only facility with the capabilities to receive naval spent nuclear fuel shipping containers and process naval spent nuclear fuel. Although the existing Expended Core Facility continues to be maintained and operated in a safe and environmentally responsible manner, the infrastructure is over 60 years old, does not meet current standards (i.e., requirements that were not applicable at the time of construction), and requires recapitalization. The Expended Core Facility is also incapable of receiving full-length aircraft carrier naval spent nuclear fuel, which is required to support aircraft carrier refuelings. The magnitude of required sustainment efforts and incremental infrastructure upgrades within the Expended Core Facility pose substantial risk to the continued preparation of naval spent nuclear fuel for long term storage. Specifically, sustainment efforts could require delays to naval spent nuclear fuel shipping container unloading operations, which would interrupt refueling and defueling schedules for nuclear-powered vessels and would adversely affect the operational availability of the nuclear fleet. If this interruption were to extend over long periods of time, the ability to sustain fleet operations would be impacted, resulting ultimately in a significant decrement to the Navy's responsiveness and agility to fulfill military missions worldwide.

The existing Expended Core Facility at the Naval Reactors Facility in Idaho is a single facility that is approximately 197,000 square feet. The Expended Core Facility has three major capabilities: (1) to receive, unload, prepare for packaging, and package naval spent nuclear fuel, (2) to prepare for examination and examine naval spent nuclear fuel, and (3) to prepare and examine irradiation test specimens from the Advanced Test Reactor. To cease operations in the aging Expended Core Facility, a three-part exit strategy is required to recapitalize the three distinct missions provided by the facility today. First, the Spent Fuel Handling Recapitalization Project (14-D-901) is constructing the Naval Spent Fuel Handling Facility to recapitalize the capabilities to receive, unload, prepare, and package naval spent nuclear fuel. Second, the Naval Examination Acquisition Project (25-D-530) is recapitalizing the capabilities to examine naval spent nuclear fuel. Lastly, the capability to prepare and examine irradiation test specimens will be recapitalized by separate efforts.

Actions necessary to continue Naval Reactors' ability to support naval spent nuclear fuel handling were the subject of an Environmental Impact Statement. The Final Environmental Impact Statement for recapitalization of the infrastructure supporting naval spent nuclear fuel was published on September 30, 2016, and included an assessment of the environmental impacts associated with handling of naval spent nuclear fuel for the following alternatives:

(1) No Action Alternative – Maintain the naval spent nuclear fuel handling capabilities of the existing Expended Core Facility by continuing to use the existing infrastructure while performing corrective maintenance and repairs.
(2) Overhaul Alternative – Recapitalize the naval spent nuclear fuel handling capabilities of the Expended Core Facility by overhauling the existing facility with major refurbishment projects for the infrastructure and water pools.
(3) New Facility Alternative, including the Spent Fuel Handling Recapitalization Project – Recapitalize the naval spent nuclear fuel handling capabilities of the Expended Core Facility by constructing and operating a new facility at one of two potential locations at the Naval Reactors Facility in Idaho.

The National Environmental Policy Act Record of Decision, which identified the New Facility Alternative as the preferred method to recapitalize the naval spent nuclear fuel handling capabilities of the Expended Core Facility, was published on December 5, 2016.

Naval Reactors has an equivalency to the project management requirements in DOE Order 413.3, *Program and Project Management for the Acquisition of Capital Assets*. The Project is being conducted in accordance with the Naval Reactors Implementation Bulletin for DOE O 413.3, and appropriate project management requirements have been met.

Prior to CD-2/3 approval, an independent cost estimate was completed by the Department of Defense Office of Cost Assessment and Program Evaluation.

Key Performance Parameters (KPPs)

The Threshold KPPs represent the minimum acceptable performance that the project must achieve. Achievement of the Threshold KPPs will be a prerequisite for approval of CD-4, Project Completion. The KPPs were formally established as part

of the Performance Baseline and approval of CD-2/3. The current SFHP Performance Baseline supports exceeding the Threshold KPPs.

Performance Measure	Threshold	Objective
Provide the facility (infrastructure) to receive, unload, prepare, and package full-length aircraft carrier and submarine naval spent nuclear fuel.	An approximately 185,000 square foot facility, which includes an approximate 15,000 square foot water pool.	An approximately 245,000 square foot facility, which includes an approximate 20,000 square foot water pool.
Provide equipment to receive and unload naval spent nuclear fuel.	Receive and unload 7 M-290 shipping containers per year.	Receive and unload 9 M-290 and 12 M-140 shipping containers per year.
Provide equipment to initially inspect and prepare naval spent nuclear fuel for ultimate disposal.	Initially inspect and prepare 62 full-length NIMITZ Class aircraft carrier spent nuclear fuel modules per year.	Initially inspect and prepare 96 full-length aircraft carrier and 64 submarine spent nuclear fuel modules per year.
Provide equipment to package naval spent nuclear fuel into canisters for dry storage.	Package 6 naval spent fuel canisters per year.	Package 10 naval spent fuel canisters per year.
Provide equipment to temporarily store naval spent nuclear fuel in the water pool.	Storage for 126 full-length NIMITZ Class aircraft carrier spent nuclear fuel modules.	Storage for 408 aircraft carrier and submarine spent nuclear fuel modules.
Provide equipment to manage remote-handled low-level waste generated from receiving, unloading, preparing, and packaging spent nuclear fuel.	Package and ship 9 remote-handled low level waste canisters per year.	Package and ship 20 remote-handled low level waste canisters per year.

3. Financial Schedule ($K)

	Budget Authority (Appropriations)[a]	Obligations[a]	Costs[a]
Total Estimated Cost (TEC)	[b]		
Design			
FY 2015	N/A	N/A	19,542
FY 2016	N/A	N/A	56,846
FY 2017	N/A	N/A	65,964
FY 2018	N/A	N/A	78,704
FY 2019	N/A	N/A	62,026
FY 2020	N/A	N/A	32,263
FY 2021	N/A	N/A	16,943
Total, Design	**N/A**	**N/A**	**332,288**
Construction			
FY 2017	N/A	N/A	1,867
FY 2018	N/A	N/A	11,530
FY 2019	N/A	N/A	66,979
FY 2020	N/A	N/A	138,986
FY 2021	N/A	N/A	242,454
FY 2022	N/A	N/A	178,347

[a] Totals may not add due to rounding.
[b] Due to the Consolidated and Further Continuing Appropriations Act, 2015, the TEC and OPC appropriations/obligations for FY 2015 and beyond are combined into the TPC appropriations/obligations.

	Budget Authority (Appropriations)[a]	Obligations[a]	Costs[a]
FY 2023	N/A	N/A	166,332
FY 2024	N/A	N/A	567,545
FY 2025	N/A	N/A	554,138
FY 2026	N/A	N/A	275,620
FY 2027	N/A	N/A	198,528
FY 2028	N/A	N/A	89,012
FY 2029	N/A	N/A	-
FY 2030	N/A	N/A	-
Total, Construction	**N/A**	**N/A**	**2,491,339**
Total Estimated Costs (TEC)			
FY 2015	N/A	N/A	19,542
FY 2016	N/A	N/A	56,846
FY 2017	N/A	N/A	67,831
FY 2018	N/A	N/A	90,234
FY 2019	N/A	N/A	129,005
FY 2020	N/A	N/A	171,249
FY 2021	N/A	N/A	259,397
FY 2022	N/A	N/A	178,347
FY 2023	N/A	N/A	166,332
FY 2024	N/A	N/A	567,545
FY 2025	N/A	N/A	554,138
FY 2026	N/A	N/A	275,620
FY 2027	N/A	N/A	198,528
FY 2028	N/A	N/A	89,012
FY 2029	N/A	N/A	-
FY 2030	N/A	N/A	-
Total, TEC	N/A	N/A	2,823,627
Other Project Cost (OPC)			
FY 2010	6,600	6,600	6,372
FY 2011	36,100	36,100	31,168
FY 2012	25,200	25,200	29,420
FY 2013	29,000	29,000	27,172
FY 2014	25,400	25,400	28,017
FY 2015	N/A	N/A	8,514
FY 2016	N/A	N/A	1,567
FY 2017	N/A	N/A	1,990
FY 2018	N/A	N/A	3,448
FY 2019	N/A	N/A	2,658
FY 2020	N/A	N/A	3,616
FY 2021	N/A	N/A	2,949
FY 2022	N/A	N/A	2,024
FY 2023	N/A	N/A	3,581
FY 2024	N/A	N/A	2,772
FY 2025	N/A	N/A	3,375
FY 2026	N/A	N/A	8,155

	Budget Authority (Appropriations)[a]	Obligations[a]	Costs[a]
FY 2027	N/A	N/A	3,037
FY 2028	N/A	N/A	664
FY 2029	N/A	N/A	4,072
FY 2030	N/A	N/A	1,800
Total, OPC	N/A	N/A	176,373
Total Project Costs (TPC)			
FY 2010	6,600	6,600	6,372
FY 2011	36,100	36,100	31,168
FY 2012	25,200	25,200	29,420
FY 2013	29,000	29,000	27,172
FY 2014	25,400	25,400	28,017
FY 2015	70,000	70,000	28,056
FY 2016	86,000	86,000	58,413
FY 2017	100,000	100,000	69,821
FY 2018	197,000	197,000	93,682
FY 2019	287,000	287,000	131,663
FY 2020	238,000	238,000	174,865
FY 2021	330,000	330,000	262,346
FY 2022	400,000	400,000	180,371
FY 2023	476,798	476,798	147,299
FY 2024[a]	199,300	199,300	570,318
FY 2025	292,002	292,002	557,513
FY 2026	280,968	280,968	306,390
FY 2027	219,479	219,479	201,565
FY 2028	213,197	213,197	89,676
FY 2029	0	0	4,072
FY 2030	0	0	1,800
Total, TPC[bb]	3,000,000	3,000,000	3,000,000

[a] FY 2024 Budget Authority assumptions are based on the FY 2024 President's Budget Request.
[b] Outyears include preliminary budget increases in anticipation of Performance Baseline Revision 4, but the current approved TPC remains at $3B. Accordingly, the FY totals do not sum to the TPC.
[b] Totals may not add due to rounding.

4. Details of Project Cost Estimate ($K)

	Current Total Estimate[a]	Previous Total Estimate[a]	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	332,288	332,288	300,789
Contingency	0	0	1,700
Total, Design	332,288	332,288	302,489
Construction			
Long Lead Material and Site Preparation	57,010	57,010	41,148
Spent Fuel Handling Equipment	263,052	258,852	215,454
Facility Construction	1,994,826	1,878,326	845,841
Contingency	176,450	297,150	107,468
Total, Construction[a]	2,491,339	2,491,339	1,209,911
Total Estimated Cost	2,823,627	2,823,627	1,512,400
Contingency, TEC	176,450	297,150	109,168
Other Project Cost (OPC)			
Conceptual Planning	37,540	37,540	37,540
Conceptual Design	99,427	99,427	99,427
Start-up	19,561	19,561	26,273
Other (e.g., EIS, Project Reviews)	19,645	14,845	7,301
Contingency	200	5,000	3,559
Total, OPC	176,373	176,373	174,100
Contingency, OPC	200	5,000	3,559
Total Project Cost	3,000,000	3,000,000	1,686,500
Total, Contingency (TEC+OPC)	176,650	302,150	112,727

[a] Totals may not add due to rounding.

5. **Schedule of Appropriation Requests ($K)**

Request Year	Type	Prior Years	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Total
FY 2014	TEC	1,286,500	0	0	0	0	0	1,286,500
	OPC	165,000	0	0	0	0	0	165,000
	TPC	1,451,500	0	0	0	0	0	1,451,500
FY 2015	TEC	1,286,500	0	0	0	0	0	1,286,500
	OPC	165,000	0	0	0	0	0	165,000
	TPC	1,451,500	0	0	0	0	0	1,451,500
FY 2015 Rev	TEC	1,388,200	19,700	0	0	0	0	1,407,900
	OPC	165,000	9,600	3,600	0	0	0	178,200
	TPC	1,553,200	29,300	3,600	0	0	0	1,586,100
FY 2016	TEC	1,406,700	24,500	19,700	0	0	0	1,450,900
	OPC	172,800	8,500	10,300	4,000	0	0	195,600
	TPC	1,579,500	33,000	30,000	4,000	0	0	1,646,500
FY 2017	TEC	1,419,500	29,300	23,600	0	0	0	1,472,400
	OPC	160,500	3,600	6,200	3,800	0	0	174,100
	TPC	1,580,000	32,900	29,800	3,800	0	0	1,646,500
FY 2018	TEC	1,419,500	29,300	23,600	0	0	0	1,472,400
	OPC	160,500	3,600	6,200	3,800	0	0	174,100
	TPC	1,580,000	32,900	29,800	3,800	0	0	1,646,500
FY 2019	TEC	N/A	N/A	N/A	N/A	N/A	N/A	1,472,400
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	174,100
	TPC	1,580,000	32,900	29,800	3,800	0	0	1,646,500
FY 2020	TEC	N/A	N/A	N/A	N/A	N/A	N/A	1,472,000
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	174,100
	TPC	1,580,000	32,900	29,800	3,800	0	0	1,686,500
FY 2021	TEC	N/A	N/A	N/A	N/A	N/A	N/A	1,886,000
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	174,000
	TPC	1,687,700	32,900	13,100	3,800	0	0	2,060,000
FY 2022	TEC	N/A	N/A	N/A	N/A	N/A	N/A	1,886,000
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	174,000
	TPC	1,936,850	106,250	16,900	0	0	0	2,060,000
FY 2023	TEC	N/A	N/A	N/A	N/A	N/A	N/A	2,159,000
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	174,000
	TPC	2,228,145	139,250	16,900	0	0	0	2,333,000
FY 2024	TEC	N/A	N/A	N/A	N/A	N/A	N/A	2,823,627
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	176,373
	TPC	2,307,098	199,300	292,002	176,000	25,600	0	3,000,000

Request Year	Type	Prior Years	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Total
FY 2025	TEC	N/A	N/A	N/A	N/A	N/A	N/A	2,823,627
	OPC	N/A	N/A	N/A	N/A	N/A	N/A	176,373
	TPC	2,307,098	199,300	292,002	280,968	219,479	213,197	3,000,000[a]

6. Related Operations and Maintenance Funding Requirements

Start of Operation of Beneficial Occupancy	3Q FY 2028
Expected Useful Life	40 years
Expected Future Start of D&D	3Q FY 2068

Related Funding Requirements
(Budget Authority in $K)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations and Maintenance	166.4	166.4	6,656	6,656

7. D&D Information

The new area being constructed in this project is replacing existing facilities. However, spent fuel handling operations in the existing Expended Core Facility will overlap with operations in the new Naval Spent Fuel Handling Facility for a period of 5 to 12 years, and examination operations in the existing Expended Core Facility will continue for the foreseeable future; therefore, the costs associated with D&D of the Expended Core Facility are not included in the costs cited for the Spent Fuel Handling Recapitalization Project.

	Square Feet
New area being constructed by this Project at the Naval Reactors Facility	213,000
Area of D&D in this Project at the Naval Reactors Facility	0
Area at the Naval Reactors Facility to be transferred, sold, and/or D&D outside the project including area previously "banked"	0
Area of D&D in this Project at other sites	0
Area at other sites to be transferred, sold, and/or D&D outside the Project including area previously "banked"	0
Total area eliminated	0

8. Acquisition Approach

The integrated Management & Operating (M&O) prime partners will plan and execute the Spent Fuel Handling Recapitalization Project in accordance with requirements. Naval spent nuclear fuel handling equipment will be procured through the procurement M&O partners. An Engineering, Procurement, and Construction Management (EPCM) firm was selected as the subcontracting strategy for design and construction management of the facility and facility systems. A 2019 amendment to the EPCM's contract changed the contract type from cost plus fixed fee to cost plus fixed fee—completion,

[a] Outyears include preliminary budget increases in anticipation of Performance Baseline Revision 4, but the current approved TPC remains at $3B. Accordingly, the FY totals do not sum to the TPC.

reflecting the maturing design and the improved certainty in Project costs and schedules. Long-lead materials were purchased, and site preparation work was performed ahead of CD-2/3.

DEPARTMENT OF ENERGY
Funding by Site
TAS_0314 - Naval Reactors - FY 2025
(Dollars in Thousands)

	FY 2023 Enacted	FY 2024 Annualized CR	FY 2025 President's Budget
Bettis Atomic Power Laboratory			
Naval Reactors Development	351,028	351,028	411,572
Columbia-Class Reactor Systems Development	10,180	10,180	3,115
Naval Reactors Operations and Infrastructure	202,700	202,700	185,024
23-D-533 BL Component Test Complex	57,420	57,420	0
Construction - Naval Reactors	57,420	57,420	0
Total Bettis Atomic Power Laboratory	**621,328**	**621,328**	**599,711**
Idaho National Laboratory			
Naval Reactors Development	99,747	99,747	94,750
Total Idaho National Laboratory	**99,747**	**99,747**	**94,750**
Knolls Atomic Power Laboratory			
Naval Reactors Development	276,060	276,060	340,756
Columbia-Class Reactor Systems Development	43,720	43,720	42,495
S8G Prototype Refueling	20,000	20,000	0
Naval Reactors Operations and Infrastructure	294,242	294,242	330,489
22-D-532 KL Security Upgrades	0	0	41,670
Construction - Naval Reactors	0	0	41,670
Total Knolls Atomic Power Laboratory	**634,022**	**634,022**	**755,410**
Naval Reactors Facility			
Naval Reactors Development	17,455	17,455	19,522
Naval Reactors Operations and Infrastructure	156,930	156,930	230,730
25-D-530 Naval Examination Acquisition Project	0	0	45,000
14-D-901 Spent Fuel Handling Recapitalization Project, NRF	476,798	476,798	292,002
Construction - Naval Reactors	476,798	476,798	337,002
Total Naval Reactors Facility	**651,183**	**651,183**	**587,254**
Naval Reactors Laboratory Field Office			
Program Direction - Naval Reactors	16,791	16,791	18,682
Total Naval Reactors Laboratory Field Office	**16,791**	**16,791**	**18,682**
Washington Headquarters			
Naval Reactors Development	1,710	1,710	1,780
Naval Reactors Operations and Infrastructure	14,930	14,930	17,020
Program Direction - Naval Reactors	41,734	41,734	44,166
Total Washington Headquarters	**58,374**	**58,374**	**62,966**
Total Funding by Site for TAS_0314 - Naval Reactors	**2,081,445**	**2,081,445**	**2,118,773**

GENERAL PROVISIONS—DEPARTMENT OF ENERGY

Sec. 301.

(a) No appropriation, funds, or authority made available by this title for the Department of Energy shall be used to initiate or resume any program, project, or activity or to prepare or initiate Requests For Proposals or similar arrangements (including Requests for Quotations, Requests for Information, and Funding Opportunity Announcements) for a program, project, or activity if the program, project, or activity has not been funded by Congress.

(b)

(1) Unless the Secretary of Energy notifies the Committees on Appropriations of both Houses of Congress at least 3 full business days in advance, none of the funds made available in this title may be used to—

(A) make a grant allocation or discretionary grant award totaling $1,000,000 or more;

(B) make a discretionary contract award or Other Transaction Agreement totaling $1,000,000 or more, including a contract covered by the Federal Acquisition Regulation;

(C) issue a letter of intent to make an allocation, award, or Agreement in excess of the limits in subparagraph (A) or (B); or

(D) announce publicly the intention to make an allocation, award, or Agreement in excess of the limits in subparagraph (A) or (B).

(2) The Secretary of Energy shall submit to the Committees on Appropriations of both Houses of Congress within 15 days of the conclusion of each quarter a report detailing each grant allocation or discretionary grant award totaling less than $1,000,000 provided during the previous quarter.

(3) The notification required by paragraph (1) and the report required by paragraph (2) shall include the recipient of the award, the amount of the award, the fiscal year for which the funds for the award were appropriated, the account and program, project, or activity from which the funds are being drawn, the title of the award, and a brief description of the activity for which the award is made.

(c) The Department of Energy may not, with respect to any program, project, or activity that uses budget authority made available in this title under the heading "Department of Energy--Energy Programs", enter into a multiyear contract, award a multiyear grant, or enter into a multiyear cooperative agreement unless—

(1) the contract, grant, or cooperative agreement is funded for the full period of performance as anticipated at the time of award; or

(2) the contract, grant, or cooperative agreement includes a clause conditioning the Federal Government's obligation on the availability of future year budget authority and the Secretary notifies the Committees on Appropriations of both Houses of Congress at least 3 days in advance.

(d) Except as provided in subsections (e), (f), and (g), the amounts made available by this title shall be expended as authorized by law for the programs, projects, and activities specified in the "Final Bill" column in the "Department of Energy" table included under the heading "Title III--Department of Energy" in the explanatory statement described in section 4 (in the matter preceding division A of this consolidated Act).

(e) The amounts made available by this title may be reprogrammed for any program, project, or activity, and the Department shall notify the Committees on Appropriations of both Houses of Congress at least 30 days prior to the use of any proposed reprogramming that would cause any program, project, or activity funding level to increase or decrease by more than $5,000,000 or 10 percent, whichever is less, during the time period covered by this Act.

(f) None of the funds provided in this title shall be available for obligation or expenditure through a reprogramming of funds that—

(1) creates, initiates, or eliminates a program, project, or activity;

(2) increases funds or personnel for any program, project, or activity for which funds are denied or restricted by this Act; or

(3) reduces funds that are directed to be used for a specific program, project, or activity by this Act.

(g)

(1) The Secretary of Energy may waive any requirement or restriction in this section that applies to the use of funds made available for the Department of Energy if compliance with such requirement or restriction would pose a substantial risk to human health, the environment, welfare, or national security.

(2) The Secretary of Energy shall notify the Committees on Appropriations of both Houses of Congress of any waiver under paragraph (1) as soon as practicable, but not later than 3 days after the date of the activity to which a requirement or restriction would otherwise have applied. Such notice shall include an explanation of the substantial risk under paragraph (1) that permitted such waiver.

(h) The unexpended balances of prior appropriations provided for activities in this Act may be available to the same appropriation accounts for such activities established pursuant to this title. Available balances may be merged with funds in the applicable established accounts and thereafter may be accounted for as one fund for the same time period as originally enacted.

(i) Subsections (d), (e), and (f) shall not apply to funds made available in this Act for applied energy research, development, demonstration, and commercial application that are utilized pursuant to section 1001 of the Energy Policy Act of 2005 (42 U.S.C. 16391). Administration and selection of awards pursuant to such section will be in coordination with the offices that oversee the appropriations accounts to which the relevant funding was originally appropriated.

Sec. 302. Funds appropriated by this or any other Act, or made available by the transfer of funds in this Act, for intelligence activities are deemed to be specifically authorized by the Congress for purposes of

section 504 of the National Security Act of 1947 (50 U.S.C. 3094) during fiscal year 2024 until the enactment of the Intelligence Authorization Act for fiscal year 2023.

Sec. 303. None of the funds made available in this title shall be used for the construction of facilities classified as high-hazard nuclear facilities under 10 CFR Part 830 unless independent oversight is conducted by the Office of Enterprise Assessments to ensure the project is in compliance with nuclear safety requirements.

Sec. 304. None of the funds made available in this title may be used to approve critical decision-2 or critical decision-3 under Department of Energy Order 413.3B, or any successive departmental guidance, for construction projects where the total project cost exceeds $100,000,000, until a separate independent cost estimate has been developed for the project for that critical decision.

Sec. 305. Notwithstanding section 161 of the Energy Policy and Conservation Act (42 U.S.C. 6241), upon a determination by the President in this fiscal year that a regional supply shortage of refined petroleum product of significant scope and duration exists, that a severe increase in the price of refined petroleum product will likely result from such shortage, and that a draw down and sale of refined petroleum product would assist directly and significantly in reducing the adverse impact of such shortage, the Secretary of Energy may draw down and sell refined petroleum product from the Strategic Petroleum Reserve. Proceeds from a sale under this section shall be deposited into the SPR Petroleum Account established in section 167 of the Energy Policy and Conservation Act (42 U.S.C. 6247), and such amounts shall be available for obligation, without fiscal year limitation, consistent with that section.

Sec. 306. No funds shall be transferred directly from "Department of Energy--Power Marketing Administration--Colorado River Basins Power Marketing Fund, Western Area Power Administration" to the general fund of the Treasury in the current fiscal year.

Sec. 307. None of the funds made available in this title may be used to support a grant allocation award, discretionary grant award, or cooperative agreement that exceeds $100,000,000 in Federal funding unless the project is carried out through internal independent project management procedures.

Sec. 308. From the unobligated balances of amounts made available to the Department of Energy to carry out activities to improve the resilience of the Puerto Rican electric grid under Public Law 117-328, thirty-five hundredths of one percent of the amounts made available under that section shall be transferred no later than September 30, 2025, to the Office of Inspector General of the Department of Energy to carry out the provisions of the Inspector General Act of 1978, to remain available until expended: Provided, That any amounts so transferred that were previously designated by the Congress as an emergency requirement pursuant to the Balanced Budget and Emergency Deficit Control Act of 1985 or a concurrent resolution on the budget are designated by the Congress as an emergency requirement pursuant to section 251(b)(2)(A)(i) of the Balanced Budget and Emergency Deficit Control Act of 1985: Provided further, That such amounts shall be available only if the President designates such amount as an emergency requirement pursuant to section 251(b)(2)(A)(i).

TITLE V—GENERAL PROVISIONS

SEC. 501. None of the funds appropriated by this Act may be used in any way, directly or indirectly, to influence congressional action on any legislation or appropriation matters pending before Congress, other than to communicate to Members of Congress as described in 18 U.S.C. 1913. SEC.

502. None of the funds made available by this Act may be used in contravention of Executive Order No. 12898 of February 11, 1994 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations).

SEC. 503. (a) None of the funds made available in this Act may be used to maintain or establish a computer network unless such network blocks the viewing, down loading, and exchanging of pornography.

(b) Nothing in subsection (a) shall limit the use of funds necessary for any Federal, State, Tribal, or local law enforcement agency or any other entity carrying out criminal investigations, prosecution, or adjudication activities.