Nuclear Energy
($K)

FY 2024 Enacted[1,2]	FY 2025 Enacted[1,2]	FY 2026 Request[1]	FY 2026 Request vs FY 2025 Enacted
1,685,000	1,685,000	1,370,000	-315,000

Proposed Appropriation Language

For Department of Energy expenses including the purchase, construction, and acquisition of plant and capital equipment, and other expenses necessary for nuclear energy 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, $1,370,000, to remain available until expended: Provided, That of such amount, $88,000,000 shall be available until September 30, 2027, for program direction.

Mission

The primary mission of the Office of Nuclear Energy (NE) is to advance nuclear power to meet the nation's energy, environmental, and national security needs.

Under the guidance of three research objectives, NE resolves barriers to technical, cost, safety, security, and proliferation resistance through early-stage research, development, and demonstration to:

- Enhance the long-term viability and competitiveness of the existing U.S. reactor fleet.
- Develop an advanced reactor pipeline.
- Implement and maintain national strategic fuel cycle and supply chain infrastructure.

Overview

Nuclear energy is a critical part of unleashing energy dominance at home and abroad. With 94 operating units in 28 states, the U.S. nuclear reactor fleet provides reliable, affordable, safe, and secure power to American families and businesses. Expanded deployment of advanced nuclear power promises to minimize land-use and transmission requirements while offering regional economic benefits, job opportunities, and unique capabilities for technological innovation. U.S. nuclear energy leadership also plays key national security and global strategic roles for the United States, including supporting the highest international standards for safety, security, and nonproliferation while shedding light on anti-competitive behaviors that impede deployment of nuclear energy.

In May of 2025, The Administration issued several Executive Orders (E.O.) to modernize nuclear regulation, streamline nuclear reactor testing, deploy nuclear reactors for national security, and reinvigorate the nuclear industrial base.

- E.O. 14299 Deploying Advanced Nuclear Technologies for National Security
- E.O. 14300 Ordering the Reform of the Nuclear Regulatory Commission
- E.O. 14301 Reforming Nuclear Reactor Testing at the Department of Energy
- E.O. 14302 Reinvigorating the Nuclear Industrial Base

The United States pioneered the development and peaceful use of civil nuclear power and the nuclear fuel cycle to produce around-the-clock, reliable baseload electricity generation. The Office of Nuclear Energy now leads and supports research, development, and demonstration (RD&D) activities enabling (1) continued operation of existing reactors, (2) deployment of new reactors, and (3) a secure and sustainable nuclear fuel cycle. NE executes its mission through investments in RD&D that leverage the tremendous innovation capacity of the United States' national laboratories, universities, and advanced nuclear technology developers to transform the global energy landscape. NE is also responsible for ensuring the secure operational availability of Idaho National Laboratory (INL) as a national asset supporting a broad range of civilian and national security research.

[1] Funding includes the transfer of SBIR/STTR to the Office of Science.
[2] Funding does not reflect the FY 2024 and FY 2025 mandatory transfer of $92.8M from Naval Reactors for operation of the Advanced Test Reactor.

The FY 2026 Request helps to advance U.S. leadership in critical technologies and upgrade America's research infrastructure. It supports the civilian nuclear energy programs of the U.S. Government to research and develop nuclear energy technologies, including generation, safety, and security technologies, to assist in unleashing America's energy dominance through strategic, innovative RD&D activities. The NE FY 2026 Request will expand the impact of our RD&D funding through innovative funding mechanisms - such as prizes, competitions, technical assistance, and programs targeted to small businesses.

Additionally, the FY 2026 Request strives to develop and demonstrate the advanced fuel cycle technologies needed to enhance U.S. global leadership in the nuclear industry by addressing gaps in the domestic nuclear fuel supply chain for both existing and advanced nuclear reactors to assure the supply of low enriched uranium (LEU), including high assay low enriched uranium (HALEU), needed by U.S. reactors and those of our allies. The FY 2026 Request also supports spent nuclear fuel management activities.

Nuclear Energy
Funding by Congressional Control ($K)

	FY 2024 Enacted - Comparable[1,2]	FY 2025 Enacted[1,2]	FY 2026 Request[3]	FY 2026 Request vs FY 2025 Enacted	
				$	%
NEUP, SBIR/STTR and TCF	**140,000**	**140,000**	**128,841**	**-11,159**	**-8%**
Reactor Concepts Research, Development & Demonstration (RD&D)					
Advanced SMR RD&D	9,500	0	0	+0	+0%
Light Water Reactor Sustainability	44,500	44,500	35,000	-9,500	-21%
Advanced Reactor Technologies	67,300	73,800	55,000	-18,800	-26%
Integrated Energy Systems	15,512	9,500	10,000	+500	+5%
Subtotal, Reactor Concepts RD&D	**136,812**	**127,800**	**100,000**	**-27,800**	**-22%**
Fuel Cycle Research and Development					
Mining, Conversion and Transportation	1,500	1,500	1,500	+0	+0%
Materials Recovery and Waste Form Development	27,500	33,000	51,000	+18,000	+55%
Accident Tolerant Fuels	92,000	97,900	92,000	-5,900	-6%
Fuel Cycle Core R&D	16,000	16,000	16,000	+0	+0%
Next Generation Fuels	63,000	65,500	58,000	-7,500	-12%
Advanced Nuclear Fuel Availability	126,500	126,500	0[5]	-126,500	-100%
Used Nuclear Fuel Disposition R&D	47,000	47,000	47,000	+0	+0%
Integrated Waste Management System	55,000	57,500	55,000	-2,500	-4%
Subtotal, Fuel Cycle R&D	**428,500**	**444,900**	**320,500**	**-124,400**	**-28%**
Nuclear Energy Enabling Technologies					
Advanced Materials and Manufacturing Technologies	10,582	14,082	14,000	-82	-1%
Advanced Sensors and Instrumentation	4,582	5,682	5,000	-682	-12%
Nuclear Energy Advanced Modeling and Simulation	27,500	28,500	28,600	+100	+0%
Nuclear Science User Facilities	34,500	34,500	34,500	+0	+0%
Gateway for Accelerated Innovation In Nuclear	11,100	11,000	10,000	-1,000	-9%
Nuclear Energy Enabling Technologies	**88,264**	**93,764**	**92,100**	**-1,664**	**-2%**
Advanced Reactor Demonstration Program					
National Reactor Innovation Center[3]	63,000	63,000	31,000	-32,000	-51%
ARDP Demonstration Reactors	60,000	60,000	20,000	-40,000	-67%
Risk Reduction for Future Demonstrations	137,222	137,222	72,000	-65,222	-48%
Regulatory Development	14,030	17,030	15,000	-2,030	-12%
Advanced Reactor Safeguards and Security	9,172	9,172	9,000	-172	-2%
23-E-200, LOTUS	32,000	16,112	7,559	-8,553	-53%
Subtotal, Advanced Reactors Demonstration Program	**315,424**	**302,536**	**154,559**	**-147,977**	**-49%**
Infrastructure					
INL Facilities Operations & Maintenance	326,000	326,000	326,000	+0	+0%
Subtotal, Infrastructure	**326,000**	**326,000**	**326,000**	**+0**	**+0%**
Idaho Sitewide Safeguards and Security	**160,000**	**160,000**	**160,000**	**+0**	**+0%**
Program Direction	**90,000**	**90,000**	**88,000**	**-2,000**	**-2%**
Total, Nuclear Energy R&D	**1,685,000**	**1,685,000**	**1,370,000**	**-315,000**	**-19%**

[1] Funding includes the funding transfer of SBIR/STTR to the Office of Science.
[2] Funding does not reflect the FY 2024 and FY 2025 mandatory transfer of $92.8M from Naval Reactors for operation of the Advanced Test Reactor.
[3] Funding through Inflation Reduction Act (IRA) in FY 2026.

Nuclear Energy
Minor Construction Activities ($K)

	Total	Prior Years	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs FY 2025 Enacted ($)
Minor Construction Projects (Total Project Cost (TPC)<$30M), Idaho National Laboratory (Direct Funded)						
Fuel Conditioning Facility Hot Repair Area Reactivation (IFM)	10,000	0	0	0	10,000	+10,000
Facility Cooling Water System (IFM)	7,000	0	0	7,000	0	-7,000
Interfacility Pneumatic Shuttle Transfer System Refurbishment (IFM)	10,000	0	0	0	10,000	+10,000
Carbon-based fuels and products synthesis testing capability (IFM)	7,600	0	0	1,600	5,000	+3,400
TRA Storage Pad (IFM)	7,000	0	0	7,000	0	-7,000
HALEU Polishing Capability (IRA)	28,000	0	28,000	0	0	0
MFC Mockup Shop Machining Relocation (IRA)	10,000	0	10,000	0	0	0
FCF Criticality Alarm System (IRA)	5,000	0	5,000	0	0	0
System Physics Advanced Reactor Critical (SPARC) Facility	27,500	0	0	19,000	4,250	-14,750
NRIC Advanced Reactor Cooldown Pad	15,000	0	0	0	3,000	+3,000
Minor Construction Projects (Total Project Cost (TPC)<$30M), Idaho National Laboratory (Indirect Funded)						
MFC East Corridor Electrical Upgrade	20,000	0	0	0	1,500	+1,500
MFC-752 HVAC Upgrades	12,000	0	0	0	1,500	+1,500
MFC Office Building	30,000	0	0	0	2,000	+2,000
Fuel Conditioning Facility Special Nuclear Material Melter	6,539	0	700	4,000	1,839	-2,161
Scoville Substation Transformer Replacements and Reliability Upgrades	11,000	0	0	0	600	+600
CFA Data Center/Dial Room	27,000	0	0	0	3,000	+3,000
CITRC Multi-Purpose Facility	25,000	0	0	0	2,500	+2,500
CFA Admin Building	28,000	0	0	2,500	8,500	+6,000
CFA Craft Shop #1	15,000	0	0	0	1,000	+1,000
ATR General Office Building	13,500	0	0	3,260	10,240	+6,980
NQA-1 Storage Facility	12,000	0	0	0	0	0
Bridge Replacements and MFC/TREAT Intersection	11,500	0	2,500	6,000	3,000	-3,000
Outer West Loop	29,000	0	0	0	0	0

	Total	Prior Years	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs FY 2025 Enacted ($)
Outdoor Testing Space and Pads at ETPG	7,500	0	0	0	3,000	+3,000
TRA-653/662 Remodel	15,000	0	0	0	3,000	+3,000
New ATR Dial Room	8,000	0	0	3,500	4,500	+1,000
SMC Guardhouse	11,000	11,000	0	0	0	0
SMC Sewer Lagoon Upgrade	7,500	0	0	0	0	0
CF-686 Buildout	6,500	2,500	2,900	1,100	0	-1,100
ATR Warm Water Waste Pond	16,500	0	0	0	8,000	+8,000
TTAF Expansion Project	11,500	0	0	0	4,500	+4,500
CFA Utility Tunnel	8,500	0	0	0	1,500	+1,500
Total, Minor Construction Projects	**459,639**	**13,500**	**49,100**	**54,960**	**92,429**	**+37,469**

University and Competitive Research Programs

Overview

The University and Competitive Research Programs budget request consolidates and focuses support to universities and small businesses in areas relevant to the Office of Nuclear Energy's (NE) mission. This program funds university-led research, university infrastructure support and revitalization, and technology commercialization efforts for nuclear energy. Efforts are largely awarded through competitive opportunities for researchers, faculty, and small businesses. Additionally, the program provides fuel services, maintenance support, reactor sharing opportunities, and upgrades for U.S. university research reactors and scientific infrastructure. This budget request is organized into two subprograms: (1) Nuclear Energy University Program (NEUP), Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR) programs, and the Technology Commercialization Fund (TCF), and (2) University Fuel Services (UFS).

Highlights of the FY 2026 Budget Request

- Under the Consolidated Innovative Nuclear Research (CINR) funding opportunity, NE will support a new topic area seeking applications for innovative artificial intelligence and machine learning solutions that can accelerate nuclear energy technology design, deployment, operation, and maintenance.
- University Fuel Services (UFS) will procure fresh fuel elements for universities and ship spent fuel elements to a DOE receipt facility. Notably, some FY 2026 funding will be used to continue fabrication of new fuel assemblies for the North Carolina State University PULSTAR reactor.

NEUP, SBIR/STTR and TCF ($100,611,000)

The NEUP, SBIR/STTR, and TCF subprogram includes competitively awarded opportunities for universities, small businesses, and national laboratories, respectively. The university program seeks to support cutting-edge, innovative research at U.S. universities. Having a single program funding line provides more flexibility to NE's competitive award process; streamlines program execution; and provides enhanced transparency for small businesses, universities, and other stakeholders.

The principal focus areas for FY 2026 include four elements: (1) Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR); (2) Technology Commercialization Fund (TCF); (3) University-led Research and Development; and (4) University Infrastructure.

1. **SBIR/STTR ($25,010,000) –** NE supports small businesses through the Department's SBIR/STTR program. The SBIR/STTR reauthorizing language (Reauthorization Act of 2011 (P.L. 112-81, 125 STAT 1822)) directs the Department to spend not less than 3.2 percent of its extramural research and development (R&D) budget for SBIR and not less than 0.45 percent of its extramural R&D budget for STTR. NE's contribution supports scope relevant to NE's R&D mission, for example technologies for improvements of existing reactors, advanced reactors, and fuel cycle systems.

2. **TCF ($6,257,000) –** NE supports the transfer of promising nuclear energy technologies developed at the Department's national laboratories to the nuclear industry for commercialization through TCF. The TCF was established under 42 U.S. Code § 16391, which directed the Secretary to "establish an Energy Technology Commercialization Fund, using 0.9 percent of the amount made available to the Department for applied energy research, development, demonstration, and commercial application for each fiscal year based on future planned activities and the amount of the appropriations for the fiscal year, to be used to provide matching funds with private sector partners to promote promising energy technologies for commercial purposes."

3. **University-led Research and Development ($57,344,000) –** NE supports nuclear energy research and development being conducted at U.S. colleges and universities through yearly competitive solicitations. The program's goal is to support outstanding, cutting-edge, and innovative research at U.S. universities in the areas of nuclear energy science and technology through the following funding opportunities:
    a. **Consolidated Innovative Nuclear Research (CINR):** NE will utilize the CINR funding opportunity to align nuclear energy research with NE's mission, focusing on strategic needs and priorities including fuel cycle, reactor concepts, and spent fuel management research. The effort will include a new topic area for artificial intelligence (AI) and machine learning (ML) solutions that can accelerate nuclear energy technology design,

licensing, deployment, operation, and maintenance. The funding opportunity also offers Integrated Research Projects (IRPs), which are multi-disciplinary and multi-institutional projects that address near-term nuclear energy research challenges, technology innovation needs, or capability gaps. IRPs are intended to integrate across disciplines to achieve solutions to complex research challenges that cannot be addressed by a less comprehensive team.

b. **Distinguished Early Career Program (DECP):** NE will continue to utilize its most prestigious opportunity for faculty members, DECP. This program will focus on early career faculty conducting transformative research and leadership aligned with NE's mission.
c. **CINR Phase II Continuation:** NE will utilize the CINR Phase II Continuation Notice of Funding Opportunity (NOFO) to provide support for teams that have performed high quality work through the Nuclear Energy University Program (NEUP) to propose new projects that complement and enhance ongoing NEUP research through a competitive application and review process.

4. **University Infrastructure ($12,000,000) –** NE supports the infrastructure needed at universities to conduct cutting-edge research.

NE provides competitively awarded funding to universities through solicitations that will include the following elements to revitalize the existing university nuclear research infrastructure.

1. **Scientific Infrastructure Support**

   a. *General Scientific Infrastructure:* to focus on equipment, instrumentation, and associated non-reactor upgrades that significantly improve or expand research, instruction, and training capabilities at individual universities and colleges.
   b. *Reactor Upgrades:* to improve existing nuclear research and training reactors at individual universities and colleges. It includes the purchase and maintenance of equipment to enhance the safety, security, performance, control, or operational reliability of the research reactor.

2. **Reactor Sharing:** to provide a competitive opportunity to increase the use of university research reactors through support of expanded partnering and public outreach.

3. **Infrastructure Revitalization**: to competitively award consortium-led efforts to establish and/or enhance nuclear research infrastructure capabilities at U.S. universities. They may include enhancements to existing reactors and the addition of related capabilities such as simulators. This support will help U.S. universities (1) offer hands-on experience with commercially relevant advanced reactor concepts, reflective of those being deployed by industry; and (2) offer research capabilities that address emerging technical challenges. These activities are expected to be led by one or more university-led consortia with appropriate expertise to ensure that the new capabilities will support these goals.

University Nuclear Leadership Program ($0)

The University Nuclear Leadership Program (UNLP) provided undergraduate scholarships and graduate fellowships to students attending two and four-year institutions of higher education.

University Fuel Services (UFS) ($28,230,000)

University Fuel Services (UFS) supports the continued operation of U.S. university research reactors for the successful execution of the nuclear energy research mission. The program ensures university research reactor fuel is handled in accordance with U.S. and Department of Energy non-proliferation and national security objectives. The primary roles of UFS are focused on the following areas:

- Providing new fuel and removing used fuel from 25 operating research reactors at 24 universities.
- Procuring new university research reactor fuel (e.g. plate, TRIGA, and PULSTAR fuel) from commercial vendors.
- Shipping spent nuclear fuel to DOE used fuel receipt facilities and lightly irradiated used TRIGA fuel to universities as needed.

University and Competitive Research Programs
Funding ($K) (Comparable)

	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs FY 2025 Enacted	
				$	%
NEUP, SBIR/STTR, and TCF	113,148	105,140	100,611	-4,529	-4%
University Nuclear Leadership Program	6,630	6,630	0	-6,630	-100%
University Fuel Services	20,222	28,230	28,230	+0	+0%
Total, University and Competitive Research Program	**140,000**	**140,000**	**128,841**	**-11,159**	**-8%**

Explanation of Changes for University and Competitive Research Programs

University Nuclear Leadership Program (UNLP)

The FY 2026 Budget provides no funding for undergraduate scholarships and graduate fellowships to students pursuing nuclear energy and related degrees and certificates at U.S. universities, colleges and trade schools.

Reactor Concepts Research, Development, and Demonstration

Overview

The Reactor Concepts Research, Development, and Demonstration (RD&D) program supports conducting RD&D on existing and advanced reactor designs and technologies to achieve national dominance in nuclear technology. This RD&D enables industry to address technical and regulatory challenges associated with maintaining the existing fleet of nuclear reactors; promoting the development of a robust pipeline of advanced reactor designs, technologies, and associated supply chains; developing technologies for producing fuels and chemicals; delivering process heat and electricity directly to industries; and progressing these advanced reactor designs and technologies towards demonstration when appropriate. Program activities are focused on addressing technical, economic, safety, and security enhancement challenges associated with the existing commercial light water reactor fleet and advanced reactor technologies, covering large, small, and micro-sized designs across an array of reactor types including light water, fast reactors using liquid metal coolants, and high temperature reactors using gas or molten salt coolants.

To maximize the benefits of nuclear power, the following challenges must be addressed:

- improving affordability of nuclear energy technologies;
- enhancing safety and reducing technical and regulatory risk;
- managing potential proliferation risks of nuclear materials;
- expanding applications and markets of nuclear energy; and
- improving the economic outlook for the U.S. nuclear industry.

Reactor Concepts RD&D is key to enabling the industry to reverse the downward market trajectory of our nation's nuclear energy sector by regaining a technological and market leadership role. Through cost-shared RD&D activities, related technical assistance, and cross-cutting innovative research and development (R&D), the Department will enable industry to accelerate the timeline for commercialization of new, advanced, and more economic reactor technologies that will help revive and expand the domestic nuclear industry while advancing America's leadership role in the global nuclear sector.

The Reactor Concepts RD&D program continues to support RD&D efforts focused on advanced reactors and the existing fleet in FY 2026. The Light Water Reactor Sustainability (LWRS) subprogram conducts research in support of existing commercial nuclear power plants to provide affordable, safe, and reliable energy. The goal is to enable industry to enhance the energy supply from the existing nuclear power plant infrastructure through capacity expansion, power uprates, and restart of closed plants. The subprogram also promotes the efficient and economic performance of current nuclear power plants while enabling their extended operation. A critical element of the subprogram is the development of advanced methodologies and tools for industry use in resolving highest priority and highest uncertainty technical issues.

The Integrated Energy System (IES) subprogram conducts R&D on nuclear energy pathways for transportation, industrial, and commercial sectors through electrical, thermal, and chemical energy forms. This subprogram focuses on developing technologies that provide multiple nuclear energy products including fuels process heat, electricity, and chemicals. These technologies broaden the market and improve long-term economics for advanced reactor deployment and existing nuclear power plants.

The Advanced Reactor Technologies (ART) subprogram conducts targeted R&D on advanced reactor technologies, including molten salt reactors, liquid metal-cooled reactors, high temperature gas-cooled reactors, and microreactors. The subprogram also supports work on cross-cutting R&D applicable to multiple advanced reactor concepts, including non-light water reactor small modular reactors (SMRs). This subprogram focuses on efforts in the following areas: fundamental technologies and design methods for advanced reactors, interactions of diverse reactor coolants with materials and components, advanced energy conversion, research to enhance safety and reduce regulatory risk, experimental validation of models, advanced materials qualification, and continued international collaborations. The ART subprogram will also support competitively awarded projects to aid the progression of emerging advanced reactor designs and technologies.

With the November 2023 cancellation of the Carbon Free Power Project, no funding is requested to continue the Advanced SMR RD&D subprogram in FY 2026.

Highlights of the FY 2026 Budget Request

The FY 2026 Budget Request supports activities to submit the initial Alloy 709 code case to the American Society of Mechanical Engineers (ASME) for approval to enable the use of Alloy 709 in advanced reactors, which would reduce capital costs and enhance performance and safety. Additionally, the High Dose Graphite-1 experiment irradiation is expected to be completed, to generate material qualification data supporting licensing of high temperature reactors.

Advanced Small Modular Reactor RD&D ($0 million)

The Advanced Small Modular Reactor (SMR) Research, Development, and Demonstration (RD&D) subprogram provided support to help re-establish U.S. leadership in nuclear energy by maturing SMR concepts toward commercial readiness. A range of significant technological accomplishments were achieved in developing advanced SMR designs.

No funding is requested in the FY 2026 budget for the Advanced SMR RD&D subprogram.

Light Water Reactor Sustainability ($35 million)

The Light Water Reactor Sustainability (LWRS) subprogram conducts R&D on technologies and other solutions that can improve economics, increase energy production, sustain safety, and maintain the technical reliability of the current domestic fleet of commercial nuclear power plants. The focus of the subprogram is on conducting R&D that addresses the nuclear industry's economic challenges promoting domestic nuclear energy expansion through restarts of closed plants, greater energy production of operational plants, and continued long-term operation to meet domestic energy demands. LWRS directs national laboratory research and collaborates with nuclear power plant owner-operators, vendors, suppliers, industry support organizations, other research organizations, and the Nuclear Regulatory Commission (NRC) to closely coordinate research that both supports industry needs and maximizes taxpayer benefit.

The LWRS subprogram consists of the following R&D areas:

- **Plant Modernization:** R&D to address nuclear power plant economic viability in current and future energy markets by increasing efficiency through the implementation of digital technologies, machine learning, and Artificial Intelligence (AI). The R&D products will enable modernization of plant systems and processes across the industry by enabling a shift from a labor-centric to a technology-centric business model that supports improved performance at a lower cost.
- **Flexible Plant Operations and Generation:** R&D to build upon previous research that will expand nuclear energy production and use, accelerate near-term capacity expansion opportunities, and extend nuclear power applications beyond the traditional electricity markets.
- **Risk-Informed Systems Analysis:** R&D to support decision-making related to the economics, reliability, and safety of the existing fleet by providing analysis solutions for integrated plant systems. This effort develops and applies advanced quantitative methods and advanced tools to address electricity production and deployment opportunities for commercial nuclear power plants.
- **Physical Security Research:** R&D that will develop and deploy advanced methods and tools to be used to implement cost-effective physical security regimes. This R&D enables companies across industry to reduce excessive conservatisms in security modeling, leverage automation as force multipliers, optimize security postures, enhance efficiency, and develop additional means to risk-inform approaches to evaluate security changes.
- **Materials Research:** R&D to ensure the performance of vital systems, structures, and components (SSC) in their in-service environments and develop techniques and methods for long-term management. The R&D products will be used to define operational limits and aging mitigation approaches for materials in nuclear power plant SSCs, providing key input to both regulators and industry.

In FY 2026, the LWRS subprogram will leverage the national laboratory system to focus the conduct of R&D to resolve industry's highest priority and highest uncertainty challenges, and to identify areas of capacity expansion and plant power uprates. The subprogram will incorporate advanced models, methods, machine learning, and artificial intelligence to address these challenges and provide solutions to improve the current business model and associated practices of the current fleet. Application of these new technologies will enable the existing nuclear power plant fleet to manage the

aging of SSCs, expand capacity and power uprates, and provide energy for applications beyond traditional electricity markets.

Advanced Reactor Technologies (ART) ($55 million)

The ART subprogram conducts essential R&D activities to reduce technical risks associated with advanced reactor technologies and systems. The subprogram's R&D scope reflects input from advanced reactor stakeholders with a goal of enabling industry to mature and ultimately demonstrate advanced reactor technologies in the 2030s. The ART subprogram focuses on industry-informed R&D priorities that would provide widely applicable benefits across many different advanced reactor concepts to enhance the likelihood of future demonstration and commercialization of emergent advanced reactor technologies and stimulate new ideas for transformational future concepts. The ART subprogram continues support for international collaborations on advanced reactor operations and safety promoting the development of advanced reactors in the United States and supporting deployment and export of U.S. technologies in the global marketplace

ART R&D efforts support innovative reactor concepts and supporting capabilities, including:

- **High temperature gas-cooled reactors (HTGR)**: supports advanced alloy qualification, scaled integral experiments, and development and validation of modeling and simulation tools to support design and licensing;
- **Fast reactors**: demonstrates feasibility of advanced systems and component technologies to enhance performance and economic competitiveness and validates methods and codes to support design and licensing;
- **Molten salt reactors (MSR)**: investigates fundamental salt properties as well as materials, models, fuels, and technologies to reduce technical uncertainties for MSRs to enable development and demonstration;
- **Microreactors**: supports non-nuclear and nuclear integrated system testing as well as maturation of innovative components. Supports the Microreactor Applications, Research, Validation and Evaluation (MARVEL) microreactor which will be a nuclear microreactor test platform to test microreactor technologies and end-use applications;
- **Graphite qualification**: supports R&D activities to irradiate, characterize, and qualify nuclear grades of graphite and to establish design rules to enable use of graphite in high temperature reactors. Supports activities to establish a domestic nuclear graphite supply chain for high temperature reactors.

Industry-led, cost-shared R&D activities are supported through competitively selected industry awards to reduce technical and regulatory risks associated with advanced reactor designs. Specifically, in FY2021, DOE announced the selection of three awards to support the development of designs that could have significant impact on the energy market in the mid-2030s or later. The three concepts selected for award were:

- Advanced Reactor Concepts, LLC: Development of a conceptual design of a seismically isolated advanced sodium-cooled reactor facility;
- General Atomics: Development of a fast modular reactor conceptual design with verifications of key metrics in fuel, safety, and operational performance; and
- Massachusetts Institute of Technology: Maturing the Modular Integrated Gas-Cooled High Temperature Reactor (MIGHTR) concept from a pre-conceptual stage to a conceptual stage.

The FY 2026 Budget Request supports activities to submit the initial Alloy 709 code case to the American Society of Mechanical Engineers (ASME) for approval to enable the use of Alloy 709 in advanced reactors, which would reduce capital costs and enhance performance and safety. Additionally, the High Dose Graphite-1 experiment irradiation is expected to be completed, to generate material qualification data supporting licensing of high temperature reactors.

Integrated Energy Systems ($10 million)

Integrated Energy Systems (IES) R&D expands the role of nuclear energy by developing technologies supporting electrical, thermal, and chemical energy pathways to deliver nuclear energy to the industrial, chemical, and transportation sectors. Goals of this subprogram include thermal distribution and control systems capable of delivering heat directly to major industrial and commercial applications managing load transients and reliability for directly supplying heat and electricity to industry and data centers, and converting nuclear energy into fuels and chemicals.

The IES subprogram consists of four pillars of R&D:

- **National Impact of Nuclear IES:** assesses the potential for nuclear energy on a national level based on market competition, enacted policies, and resource limitations for all energy sources.
- **Nuclear Applications R&D:** assesses economic opportunities for supplying energy to a variety of industrial plants. Cost optimization for near-term opportunities substituting energy imports with nuclear energy and longer-term opportunities of retrofitting industrial plants with advanced processes for nuclear energy applications.
- **Thermal Systems R&D:** conducts research on utilizing nuclear heat for industry. This effort analyzes industrial requirements to develop cost-effective and reliable thermal system designs that include heat exchangers, thermal storage, fluid system components, turbine engines, and control systems.
- **Chemical Systems R&D:** focuses on developing nuclear e-fuels that are distributed and used by the existing transportation infrastructure and developing economically competitive processes for producing a range of chemical commodities with nuclear power.

The FY 2026 Budget Request supports activities that will focus on technical targets for nuclear energy systems, technical and economic analyses for industrial plants, assessment of nuclear combined heat and power systems located on industrial sites, optimization of heat transport systems, work on refinery models to support nuclear integration beyond simple substitution of imported electricity, steam and hydrogen, and development and testing of primary chemical processes. These efforts broaden the applications of nuclear energy providing a range of domestic energy products and expanding the marketability of nuclear power plants.

Reactor Concepts Research, Development, and Demonstration
Funding ($K)

	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs FY 2025 Enacted	
				$	%
Reactor Concepts Research, Development, and Demonstration					
Advanced Small Modular Reactor RD&D	10,000	-	-	-	-%
Light Water Reactor Sustainability	45,000	44,500	35,000	-9,500	-21%
Advanced Reactor Technologies	54,000	73,800	55,000	-18,800	-26%
Integrated Energy Systems[1]	-	9,500	10,000	+500	+5%
Total, Reactor Concepts Research, Development, and Demonstration	**109,000**	**127,800**	**100,000**	**-27,800**	**-22%**

Explanation of Changes for Reactor Concepts Research, Development, and Demonstration

The decrease to the Light Water Reactor Sustainability subprogram reflects reduced obligation to a previously awarded industry-led project as the federal cost share will be fully funded in FY 2026.

The decrease in the ART budget from $73.8 million to $55 million reflects a focus on activities needed to achieve national dominance in nuclear technology, including developing innovative concepts for nuclear reactors. The decrease also reflects completion of fabrication of the MARVEL reactivity control system and completion of funding for key MARVEL contracts.

[1] Integrated Energy Systems was a lower-level program within Nuclear Energy Enabling Technologies, Crosscutting Technology Development in FY 2024.

Fuel Cycle Research and Development

Overview

The Fuel Cycle Research and Development (FCR&D) program conducts applied research and development (R&D) on advanced fuel cycle technologies that have the potential to accelerate progress on managing and disposing of the nation's spent fuel and high-level waste, improve resource utilization and energy generation, reduce waste generation, and limit proliferation risk. The FCR&D program also contributes to the Department's policies and programs for ensuring a secure, reliable, and economic nuclear fuel supply for both existing and future reactors.

The FCR&D program also has the responsibility for the disposition of U.S. spent nuclear fuel (SNF) and high-level radioactive waste (HLW), as stated in Nuclear Waste Policy Act of 1982, Public Law 97–425, as amended. The Department remains committed to fulfilling its legal obligation to properly manage and dispose of this material, thereby reducing the Federal Government's estimated SNF liabilities. The program also supports R&D on multiple advanced fuel technologies that hold promise for enhanced performance and improved economics or are an important element in the development of the next generation of reactor designs.

A critical focus of the FCR&D program is supporting the availability of High-Assay Low-Enriched Uranium (HALEU) for civilian domestic research, development, demonstration, and commercial use. The program is ensuring small quantities of HALEU are available in the near-term and establishing a long-term commercial HALEU and LEU supply chain capable of supporting deployment of advanced reactor technologies and continued operation of the existing commercial nuclear fleet.

Highlights of the FY 2026 Budget Request

- The Material Recovery and Waste Form Development (MRWFD) subprogram will focus on advancements in nuclear fuel recycling and waste treatment technologies. Key areas of development include aqueous and vapor phase actinide separation, hybrid ZIRCEX vapor phase extraction with advanced chlorination for HALEU production, off-gas and waste form improvements, and pyro/molten salt processing techniques. The overall goal is to develop more efficient, scalable, and cost-effective methods for nuclear fuel recycling, separation of valuable materials, and waste reduction.

- The Accident Tolerant Fuels (ATF) subprogram focuses on high burnup fuels testing support for industrial licensing needs. Commercial reactor irradiated fuel will be shipped to national laboratories, and industrial contracts for ATF will be placed. The Light Water Reactor Testbed will be utilized to support ATF industrial partners' licensing needs, and Post Irradiation Examination (PIE) on ATF commercial reactor irradiated fuel will continue. Separate effects testing on ATF samples will also continue.. Progress will be made toward establishing experimental infrastructure to support Light Water Reactor (LWR) research capabilities.

- The Next Generation Fuels (NGF) subprogram will focus on advanced nuclear fuel research and will concentrate on several key areas to enhance reactor performance and safety. Research on advanced metallic fuels will focus on qualification, improved fabrication, safety testing, and next-generation technologies for sodium-cooled fast reactors. Molten salt fuel research will focus on salt synthesis and irradiation effects. Silicon-carbide cladding will undergo continued fabrication development, testing, and performance code development. Long-term accident-tolerant fuels will be explored through a call for proposals. Research on coated fuel particles (TRISO) will involve completing post-irradiation examination and safety testing while also developing future testing plans. Finally, advanced physics testing will focus on developing a fast reactor SPARC test platform and a five-year plan for critical experiments.

- In FY 2026, the Advanced Nuclear Fuels Availability (ANFA) subprogram will be funded using appropriations from the Inflation Reduction Act of 2022 (IRA). The subprogram supports the availability of small quantities of HALEU for civilian domestic research, development, demonstration, and commercial use. Activities include production from the HALEU demonstration cascade, and recovery and down-blending of limited excess quantities of DOE uranium inventories. The ANFA subprogram complements activities funded under IRA Section 50173, and authorizations under the Nuclear Fuel Security Act of 2023 (NFSA) (section 3131 of the National Defense Authorization Act for Fiscal Year 2024 (Public Law 118–31)).

- Fuel Cycle Laboratory R&D subprogram will focus on key areas to include innovative nuclear materials research aimed at next-generation fuel cladding through advanced manufacturing and novel coatings; enhanced capabilities in Integrated Performance Characterization and salt fuel technologies, focusing on quantitative measurements and fission product removal; advancements in Materials Protection, Accounting, and Control Technologies (MPACT), including holdup monitoring, electro-refiner voltammetry, and nuclear material accounting for fuel fabrication; and comprehensive Systems Analysis and Integration efforts to develop nuclear outlooks, support the assessment of recycling fuel cycle economics, facilitate rapid deployment of advanced reactors, and support HALEU market sustainability.

- The Used Nuclear Fuel Disposition subprogram prioritizes the critical path schedule for the High Burnup Research Cask shipment and opening to support the current commercial nuclear fleet. The subprogram will also perform generic engineering and scientific studies for several candidate geologies for the long-term management of the nation's SNF and HLW.

- The Integrated Waste Management System subprogram will focus on the development and implementation of the Administration's policy to support the management of spent nuclear fuel and high-level waste, in line with Executive Order 14302 Reinvigorating the Nuclear Industrial Base and consistent with the Nuclear Waste Policy Act of 1982, Public Law 97–425, as amended. The program will continue with the development of the necessary infrastructure to move SNF.

Material Recovery and Waste Form Development ($51 million)
The Material Recovery and Waste Form Development (MRWFD) subprogram conducts applied R&D on advanced fuel recycling technologies that have the potential to improve resource utilization and energy generation, reduce waste generation, and manage potential proliferation risk. The subprogram focuses on developing advanced fuel recycling technologies and addressing fundamental materials separations and recovery challenges that present significant degrees of technical risks and financial uncertainties.

The MRWFD subprogram supports the development and demonstration of various recycling technologies to make available quantities of HALEU materials for advanced reactor fuel-fabrication R&D needs. The subprogram continues to evaluate the feasibility of recycling federally owned highly-enriched uranium (HEU) fuels for HALEU production by developing hybrid Zirconium Extraction (ZIRCEX) technology using a ¼-scale vapor phase demonstration pilot facility at Idaho National Laboratory (INL).

Mining, Conversation, and Transportation ($1.5 million)
The Office of Nuclear Energy supports the uranium mining R&D efforts to continuously revitalizing and strengthening the domestic uranium mining industry to benefit the entire front-end of the U.S. nuclear fuel cycle. De-risking the uranium mining technology will help fulfill the Department's goal in unleashing commercial nuclear power in the United States.

In-situ recovery (ISR) technology is the most cost effective and environmentally acceptable uranium mining method in the United States. The Mining, Conversion, and Transportation subprogram has assembled a technical assistant team with ISR experts from Brookhaven, Idaho, Los Alamos, Oak Ridge, and Pacific Northwest National Laboratories. The subprogram goals are to support the uranium mining industry to reduce ISR technology costs and technical uncertainties, accelerate advances, and regain American leadership in ISR technology. Specific R&D efforts supported by this subprogram include:

- advanced in-situ sensors and monitoring systems and characterization capabilities,
- groundwater solution chemistries and associated biological effects,
- subsurface geological conditions and geo-physical characterization, and
- modeling and computation with an emphasis on using artificial intelligence and machine learning tools.

In FY 2026, this subprogram will continue supporting technical experts at DOE national laboratories to develop innovative technologies to improve in-situ uranium extraction efficiency and resource utilization for domestic uranium mining industry.

Accident Tolerant Fuels ($92 million)
The Accident Tolerant Fuels (ATF) subprogram mission is to enable the commercial nuclear industry to enhance the performance and safety of commercial U.S. reactors. The ATF subprogram, in collaboration with nuclear fuel vendors,

performs basic research and testing, infrastructure development, and post-irradiation examinations (PIE), through testing in commercial light water reactors (LWR). The subprogram will meet the objectives of the Nuclear Energy Innovation and Modernization Act (Public Law 115-439), and as re-established by the ADVANCE Act of 2024 (division B of Public Law 118-67). Both the NEIMA and ADVANCE Act provide objectives for the near-term ATF technologies towards enhanced safety and economics.

Nuclear fuel designs with enhanced accident tolerance are intended to provide further safety and performance benefits in comparison to the current UO_2-Zircaloy systems used by the nuclear industry today. These benefits may include in-reactor performance enhancements in normal, transient, and abnormal conditions to reduced handling or storage requirements by reducing discharged-from-service SNF assemblies. Additionally, the use of ATF will enable utilities to consider additional power uprates, a significant potential for improved utility economics that directly supports U.S. energy dominance.

The U.S. nuclear fuel suppliers are developing near-term concepts towards industrialization in the areas of coated claddings and nuclear fuel. Phase 2, Development and Qualification, is near completion. The FY 2026 Budget includes funding to begin Phase 3, Commercialization, focused on performance testing of near-term commercially irradiated samples. The primary objective of Phase 3, the near-term technologies will have reached industrialization whereby industry will lead further deployment activities. . By the end of Phase 3, one or more nuclear fuel vendors will have succeeded in using ATF near-term technologies to effect commercial plant safety and capacity enhancements consistent with recent executive orders.

Next Generation Fuels ($58 million)
The Next Generation Fuels (NGF) subprogram mission is to perform R&D to revolutionize performance and safety of existing commercial U.S. reactors and advanced LWRs including Small Modular Reactors (SMR) and non-LWRs in coordination with industrial stakeholders, including early engagement with regulatory bodies, as appropriate. NGF laboratory-based R&D lays the groundwork for nuclear fuel designs that significantly outperform today's fuel, focusing on long-term, high-reward nuclear fuel concepts and will continue to drive innovation over the long term.

As a single subprogram with a common purpose, NGF is focused on long-term fuel development efforts including:

- long-term ATF concepts,
- metallic fuel,
- advanced coated particle fuel analysis, and
- molten salt fuels.

Long term high-risk high-reward technologies such as silicon carbide cladding, iron-chrome-aluminum cladding, and higher uranium density fuel are concepts that have great potential to provide even better performance than the near-term ATF subprogram activities described in the preceding section.

Metallic fuel development can assist industry in qualifying the fuel for use in demonstration reactors with long-term improvements. The Leading Innovation in Fuel Technology (LIFT) activity develops the data and methods that support industry and non-LWR advanced reactor developers, such as Sodium-cooled Fast Reactors. Metallic fuel is also important for recycle-driven fuel cycle scenarios under consideration in the United States and can build on these research activities. The subprogram will establish a reference fuel performance using legacy data and modern tools to fill the knowledge gaps.

Investigation of coated particle fuel technologies may extend the existing Tristructural-isotropic (TRISO) particle fuel development and qualification activities and support non-LWR designs. TRISO fuel also has applications for other reactor concepts such as molten salt-cooled high temperature reactors, microreactors, and nuclear thermal propulsion. Irradiation, safety testing, and PIE of TRISO fuel continue to provide data for fuel development and qualification in support of industry efforts to establish a domestic commercial TRISO fuel fabrication capability.

Molten salt fuels are also of interest to advanced reactor developers and require considerable R&D to increase the technology readiness level. Molten salt fuels activities support the development of equipment for salt fuel purification, synthesis, and characterization and capabilities to convert oxide and metal fuels to molten halide salt fuels as well as designing unique irradiation test fixtures for molten salt fuel.

Advanced physics testing in the System Physics Advanced Reactor Critical (SPARC) will enable new fuel designs, configurations, and materials performance to be tested in a physics experiments facility established at INL, in a reactor building once used for the historic Special Power Excursion Reactor Test IV studies. This type of zero-power reactor will provide key benchmarking data for designing, optimizing and licensing advanced reactors and the fuel concepts while providing criticality safety data important to the manufacture, shipping, and storage of advanced nuclear fuel systems. SPARC Horizontal Split Table (HST) will represent the nuclear physics of reactors fueled with advanced LWR fuel assemblies, TRISO fuel composites, metallic fuel fast reactor designs, and captures the physics needs of essentially all other systems of interest.

Advanced Nuclear Fuels Availability ($0)
In FY 2026, the activities under the ANFA subprogram will be funded using IRA appropriations. The Department also plans to issue competitive Task Order awards for domestic commercial HALEU deconversion services using IRA appropriations in FY 2026. Companies awarded Indefinite Delivery Indefinite Quantity (IDIQ) contracts with DOE for HALEU deconversion services are eligible to bid on Task Order Awards. The Office of Nuclear Energy will retain the flexibility to fund the accelerated treatment of EBR-II driver fuel or any other scope consistent with IRA Section 50173 using IRA appropriations.

Under the ANFA subprogram, HALEU production will continue under contract with American Centrifuge Operating, LLC at the American Centrifuge Plant in Piketon, Ohio to produce 900 kg UF6 between July 1, 2025, and June 30, 2026.

Activities to support recovery and down-blending of limited excess quantities of DOE uranium inventories will continue in order to meet the needs and schedules of advanced reactor developers. At INL, accelerated treatment of EBR-II driver fuel will produce HALEU metal and enable a successful outcome to the commitment established between DOE and the State of Idaho for completing EBR-II driver fuel treatment prior December 31, 2028, as stipulated in the 2019 Supplemental Agreement to the 1995 Idaho Settlement Agreement. Purification of EBR-II reguli and conversion will produce HALEU oxide. At SRS, downblending the separated inventory of purified HEU solutions in H-Canyon storage will result in 3,100-5,500 kgU HALEU uranyl nitrate solution.

The ANFA subprogram complements activities funded under IRA Section 50173 including:
- Supporting the availability of HALEU for civilian domestic research, development, demonstration, and commercial use,
- Development of criticality benchmark data in support of the U.S. Nuclear Regulatory Commission (NRC),
- Grant opportunities for research, development, and acquisition of NRC certification for HALEU transportation packages, and
- Grant opportunities for innovative technologies to address gaps, enhance current processes, and advance new technologies to produce HALEU.

Finally, the ANFA subprogram complements authorizations under NFSA to support domestic uranium mining, conversion, and enrichment, including domestic production of LEU and HALEU to meet the needs of advanced reactor developers and the consortium. The Energy and Water Development and Related Agencies Appropriations Act, 2024 (P.L. 118-42, Division D), repurposed $2.720 billion in unobligated balances from the Infrastructure Investment and Jobs Act (P.L. 117-58) to the American Energy Independence Fund to carry out NFSA. The Department plans to issue competitive Task Order awards for domestic commercial LEU enrichment and HALEU enrichment using these funds in FY 2026. Companies awarded IDIQ contracts by DOE for LEU enrichment and HALEU enrichment respectively are eligible to bid on Task Order Awards. In addition, the FY 2026 Budget assumes receipts credited to the American Energy Independence Fund as discretionary offsetting collections during this or any prior fiscal year, as authorized by section 312(a) of title III of division D of Public Law 118-42, shall be available until expended to carry out the purposes of the Fund.

Fuel Cycle Laboratory ($16 million)
This subprogram supports research activities that advance knowledge of nuclear fuel cycles and provide transformative innovations to accelerate development of civil nuclear technologies, including consideration of fuel cycle impacts from the potential deployment of advanced reactor technologies. It includes activities in Materials Protection, Accounting and Control Technologies (MPACT), Systems Analysis and Integration (SAI), Innovative Nuclear Materials (INM), and Innovative Process Control.

MPACT develops innovative technologies, analysis tools, and advanced integration methods to enable U.S. domestic nuclear materials management, to enable safeguards for emerging nuclear fuel cycles and to address vulnerabilities in current nuclear systems while managing potential proliferation risks. Addressing U.S. energy security needs requires innovative approaches to material control and accounting (MC&A) to ensure that nuclear material is not misused, diverted, or stolen. In FY 2026 MPACT will develop nuclear material accounting and control approaches for addressing holdup at fuel fabrication and enrichment plants including scale up of TRISO fuel fabrication

SAI activities include strategic planning and analysis as well as integrated evaluation of Fuel Cycle Laboratory R&D subprogram activities. It provides the critical capability needed to analyze complex fuel cycle system options, project nuclear energy demand under various scenarios, assess overall nuclear technology readiness, evaluate nuclear energy competitiveness and economic viability, and improve understanding of the interdependencies between various subsystems and associated technologies. In FY 2026, SAI aims to further develop domestic and global nuclear outlook and guidebook on nuclear energy application to data centers including techno-economic market analyses as requested.

INM activities continue focusing on longer-term cladding and in-core materials discovery and development for advanced nuclear energy systems applications. The goals are to develop new tools, techniques, and capabilities at national laboratories to accelerate the pace of new materials discovery, building on recent advances in artificial intelligence, machine learning, theory, modeling, and computing, and advanced characterizations. More specifically, innovative approaches are needed to develop advanced metallic alloys and composite materials that are optimized to meet new reactor performance targets within the reactor core and fuel cladding, and includes recycling of Zircaloy cladding material, which is the second largest mass in used fuel assemblies. Developing recovery process with sufficient Zr purity to permit re-use will reduce the waste quantity as well as enhance resource utilization and assist in developing similar recycling approaches for other high value nuclear materials. In FY 2026, INM will further develop innovative materials such as novel ceramic/composite coatings and advanced manufacturing techniques to support new types of alloys and thin-walled cladding tubes.

Innovative Process Control activities support foundational research to innovate the fuel cycle process and associated control technologies. The goals are to enhance process controllability and to enable predictive modeling capability in advanced fuel cycle systems. Implementing advanced process control and modeling technologies into the recycling plant design will reduce the size of such tanks or eliminate the need for the tank space, directly reducing the cost of plant construction and operations. In FY 2026, Innovative Process Control will develop the basis for liquid fueled process controls, such as demonstrate the capability of chlorine reference electrode to make quantitative measurements of chlorobasicity of a molten salt solution which directly affects the chemistry and physical properties of molten salt solutions.

Integrated Waste Management ($55 million)
The Integrated Waste Management System (IWMS) subprogram supports efforts to develop and implement Federal plans for the long-term management of SNF and HLW, in line with Executive Order 14302 Reinvigorating the Nuclear Industrial Base and consistent with the Nuclear Waste Policy Act of 1982, Public Law 97–425, as amended.

Used Nuclear Fuel Disposition ($47 million)
The Used Nuclear Fuel Disposition (UNFD) R&D subprogram conducts engineering studies, targeted research, technology development, and program planning for the long-term disposition of spent nuclear fuel and high-level waste.

UNFD focused activities include:

- Conducting generic engineering studies of several candidate geologies that could support siting a deep geologic repository for the permanent disposal of SNF;
- Developing plans for gas sample collection and post-irradiation examination of SNF from the high burnup research cask (HBURC) after it is shipped from the North Anna Power Station in Virginia to INL – data from this project supports continued safe storage of high burnup SNF at U.S. nuclear power plants and future DOE storage facilities;
- Preparing to ship the HBURC in 2027 includes acquisition of transport equipment (impact limiters, cradle, end stops) and coordination with State and Tribal governments on emergency response training, technical assistance, and public engagement;
- Launching the Spent Nuclear Fuel Center for Applied Research in Storage and Transportation to collaborate with the nuclear industry to address common challenges related to extended storage of SNF including different fuel

types, higher enrichments, and higher burnups. The subprogram will leverage lessons-learned from countries with established SNF storage and transportation programs;
- Non-site-specific activities to lay the groundwork for future disposal, to the extent permitted by law;
- Conduct limited research on disposal in granite and shale; and
- Leverage artificial intelligence to synthesize and evaluate available information on large-scale SNF siting efforts.

Fuel Cycle Research & Development
Funding ($K)

	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs FY 2025 Enacted	
				$	%
Material Recovery & Waste Form Development	27,500	33,000	51,000	+18,000	+55%
Mining, Conversion, & Transportation	1,500	1,500	1,500	-	-%
Accident Tolerant Fuels	92,000	97,900	92,000	-5,900	-6%
Next Generation Fuels	63,000	65,500	58,000	-7,500	-12%
Advanced Nuclear Fuels Availability	126,500	126,500	0	-126,500	-100%
Fuel Cycle Laboratory R&D	16,000	16,000	16,000	-	-%
Integrated Waste Management	55,000	57,500	55,000	-2,500	-4%
Used Nuclear Fuels Disposition R&D	47,000	47,000	47,000	-	-%
Total, Fuel Cycle Research & Development	**428,500**	**444,900**	**320,500**	**-124,400**	**-28%**

Explanation of Changes for Fuel Cycle Research & Development

Material Recovery & Waste Form Development (+$18 million)
The budget increase from FY 2025 provides significant acceleration of U.S. research towards advanced nuclear fuel recycling. The technologies have the potential to improve resource utilization and energy generation, reduce waste generation, and manage potential proliferation risk. The Hybrid ZIRCEX activity will design and demonstrate a pilot scale using advanced chlorination techniques. The Off-gas & Waste Form activity will construct a caustic scrubber. The Pyro/Molten Salt activity will seek to demonstrate kilogram-scale deposition techniques of uranium and transuranic onto a solid cathode. Finally, accelerated treatment of EBR-II driver fuel is funded within this subprogram.

Accident Tolerant Fuels (-$5.9 million)
The budget decrease from FY 2025 reflects a correction from previous year carve-out. The Department will continue to prioritize R&D on high-risk, high-reward nuclear fuel concepts that will have enhanced reactor safety and performance.

Next Generation Fuels (-$7.5 million)
The budget decrease from FY 2025 reflects a correction from a previous carve-out. The Department will continue to prioritize long-term, high-reward R&D towards nuclear reactor enhancements in the area of safety and performance.

Advanced Nuclear Fuels Availability (-$126.5 million)
The budget decrease from FY 2025 reflects the use of IRA appropriations in FY 2026.

Integrated Waste Management System (-$2.5 million)
The budget decrease from FY 2025 reflects an adjustment from a previous year increase. The Department will continue to prioritize the disposition of U.S. SNF and HLW without impact to the program mission.

Nuclear Energy Enabling Technologies

Overview

The Nuclear Energy Enabling Technologies (NEET) program conducts research and development (R&D) and makes strategic investments in research capabilities to develop innovative and crosscutting technologies that resolve nuclear technology development issues to enable continued operation of existing U.S. nuclear reactors, enable deployment of advanced nuclear reactors, and develop advanced nuclear fuel cycles. The NEET program budget request is organized into five subprograms: (1) Advanced Materials and Manufacturing Technologies (AMMT), (2) Advanced Sensors and Instrumentation (ASI), (3) Nuclear Energy Advanced Modeling and Simulation (NEAMS), (4), Nuclear Science User Facilities (NSUF), and (5) Gateway for Accelerated Innovation in Nuclear (GAIN).

Highlights of the FY 2026 Budget Request

- NEAMS will complete thermal hydraulic capability to model key gas reactor air-ingress and steam-ingress accidents.
- AMMT will complete the development of a new-generation Fe-based alloy, have it ready to begin qualification, and continue irradiation and post-irradiation examinations of alloy 709 and laser powder bed fusion 316H for nuclear reactor applications.

Advanced Materials and Manufacturing Technologies (AMMT) ($14,000,000)

Advanced Materials and Manufacturing Technologies (AMMT) accelerates the development, qualification, demonstration, and deployment of advanced materials and manufacturing technologies in support of the U.S. leadership in a broad range of nuclear energy applications. The vision of AMMT is the expansion of reliable and economical nuclear energy enabled by advanced materials and manufacturing technologies. Four major technical areas were established to realize the mission and vision of the AMMT program:

- Advanced Materials and Manufacturing - addresses stakeholders' needs through integrated material and manufacturing technologies development to accelerate readiness and provide effective, economic solutions for the nuclear industry.
- Rapid Qualification - establishes a qualification framework for new materials to enable their timely deployment in advanced reactors more rapidly than current standards.
- Environmental Effects - addresses materials degradation for topics that are not covered by current codes and standards, including corrosion and irradiation effects on mechanical properties allowing for long term predicted performance.
- Technology Maturation - advances a technology by increasing its technology readiness level by moving it from concept through technology demonstration and validation to a reliable and scalable solution ready for real-world applications.

Advanced Sensors and Instrumentation (ASI) ($5,000,000)

Advanced Sensors and Instrumentation (ASI) conducts R&D of sensors, instrumentation and controls to support the continued operation of the existing reactor fleet, to address critical measurement technology gaps identified by the advanced reactor developer community, and to support nuclear fuel cycle development. By leveraging engagement with the U.S. national laboratories, universities, and private industry, ASI coordinates R&D to foster technology maturation from initial concept to commercial product. ASI engages directly with other programs in the Office of Nuclear Energy (NE) and with advanced reactor developers to inform its R&D, with its goals and R&D priorities published in the Advanced Sensors and Instrumentation Roadmap, updated annually.

- Develop high performance and rugged sensors for the harsh environments of advanced reactors to measure parameters such as pressure, temperature, and radiation.
- Enhance novel measurement methods and sensor performance in irradiation experiments for nuclear fuels and sensor qualifications.
- Develop methods for sensor integration into existing and future advanced reactor control systems to enhance operational efficiency and safety for the broader industry.
- Expand the development of artificial intelligence (AI) and machine learning (ML) techniques for nuclear industry applications, such as for autonomous control systems, digital twins, and sensor architecture improvements.

Nuclear Energy Advanced Modeling and Simulation (NEAMS) ($28,600,000)

Nuclear Energy Advanced Modeling and Simulation (NEAMS) develops and deploys a set of predictive modeling and simulation tools to support deployment of new nuclear reactor designs and more economic operation of existing nuclear reactors. NEAMS tools provide fundamental insights that are unattainable through experiment alone, inform experiment selection, drive design, and minimize the cost of research, development, and deployment. These modeling and simulation capabilities are extremely flexible and able to accommodate different reactor types and designs.

- For the existing fleet, NEAMS tools address core performance optimization issues and accelerate development of fuels with enhanced accident tolerance to help assure the long-term availability and market competitiveness of nuclear energy.
- For advanced reactor technologies, NEAMS tools help industry accelerate development and meet otherwise cost-prohibitive data needs.
- These tools also help support Nuclear Regulatory Commission (NRC) efforts to address its confirmatory analysis needs.

Nuclear Science User Facilities (NSUF) ($34,500,000)

The Nuclear Science User Facilities (NSUF) is the Nation's designated mechanism to gain access to DOE National Laboratory user facilities for nuclear energy research. As a consortium of partner facilities, NSUF provides users from industry, laboratories, and universities access through competitive solicitations to highly specialized nuclear energy capabilities and infrastructure. On an annual basis, researchers propose projects to be conducted at these unique facilities, with timelines ranging from a few months to several years. When projects are awarded, the NSUF funds the experiment support and laboratory services at the partner user facilities. The focus areas include awarded research for irradiation and post-irradiation examination, high-performance computing (HPC), and capability development as follows:

- The NSUF competitively supports irradiation and post-irradiation examination user access projects to accelerate emergent and innovative nuclear fuel and materials research. User projects include access to research and test reactors such as the Advanced Test Reactor, hot cells, beamline capabilities, irradiation capabilities, irradiation experiment design, test fabrication support, and expert technical support.
- HPC supports scientific computing capabilities to enable nuclear energy advanced energy modeling and simulation, artificial intelligence, and digital twin activities. Four HPC supercomputers are planned to be in operation at Idaho National Laboratory including NE's newest flagship system called Teton.
- Capability development including the Nuclear Fuels and Materials Library support the curation of a collection of high-value neutron irradiated fuel and material specimens accessible to industry and other users from current and prior irradiation test campaigns and real-world components retrieved from decommissioned power reactors.

Gateway for Accelerated Innovation in Nuclear ($10,000,00)

The Gateway for Accelerated Innovation in Nuclear (GAIN) facilitates access for industry and other stakeholders to the technical, regulatory, and financial support necessary to move advanced nuclear technologies toward commercialization and ensure the continued reliable and economic operation of the existing fleet.

GAIN provides direct support to the nuclear industry by:

- Leading nuclear technology cost projection updates and capacity expansion modeling efforts
- Curating and maintaining the legacy documents from demonstration reactors and other significant experiments dating back to the 1950s
- Examining and enhancing contracting mechanisms to more effectively collaborate with industry; and
- Hosting topic-specific workshops and coordinating National lab visits for industrial partners.

In addition, GAIN provides technical assistance to a wide range of stakeholder groups considering nuclear energy as an appropriate fit for their unique energy needs and objectives. In FY 2026, the Department expects that these activities will increase in importance as more States and local communities consider nuclear energy deployment.

On a quarterly basis, GAIN provides competitive opportunities for cost-shared research at the Department's national laboratories to resolve specific technical issues hindering the deployment of nuclear technologies.

Nuclear Energy Enabling Technologies
Funding ($K)

	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs FY 2025 Enacted	
				$	%
Advanced Materials and Manufacturing Technologies	10,582	14,082	14,000	-82	-1%
Advanced Sensors and Instrumentation	4,582	5,682	5,000	-682	-12%
Nuclear Energy Advanced Modeling and Simulation	27,500	28,500	28,600	+100	-%
Nuclear Science User Facilities	34,500	34,500	34,500	-	-%
Gateway for Advanced Innovation in Nuclear	11,100	11,000	10,000	-1,000	-9%
Total, Nuclear Energy Enabling Technologies	**88,264**	**93,764**	**92,100**	**-1,664**	**-2%**

Explanation of Changes for Nuclear Energy Enabling Technologies
ASI – The reduction from $5,682,000 to $5,000,000 supports a more focused set of AI applications and irradiation experiments for sensor development.

Advanced Reactor Demonstration Program

Overview

The Advanced Reactor Demonstration Program (ARDP) focuses Departmental and non-federal resources on supporting the development of commercially promising advanced reactors that have the potential for near and mid-term demonstration and commercial deployment and addressing challenges hindering their deployment. The elements of the ARDP program are consistent with the Administration's energy dominance agenda by developing and deploying advanced commercial nuclear power plants for domestic utilities that are safe, economical, and reliable and to reestablish the United States as the leader in nuclear technologies, in accordance with recent nuclear energy related Executive Orders.

The ARDP research and development elements leading to demonstration include these four major elements:

- National Reactor Innovation Center (NRIC) – Supports testing, demonstration, and performance assessment to accelerate deployment of advanced reactors through development of advanced nuclear energy technologies by utilizing the unique DOE national laboratory facilities and capabilities;
- Risk Reduction for Future Demonstrations – Supports cost-shared (up to 80% government, not less than 20% industry) partnerships with U.S.-based teams to address technical, operational, and regulatory challenges to enable development of a diverse set of advanced nuclear reactor designs for future demonstration;
- Regulatory Development – Coordinates activities with the Nuclear Regulatory Commission (NRC) and U.S. industry to address and resolve key regulatory framework and licensing technical issues that directly impact the "critical path" to advanced reactor demonstration and deployment; and
- Advanced Reactor Safeguards and Security – Evaluates safeguards and security issues that are unique to advanced reactors to help reduce roadblocks by solving regulatory challenges, reducing safeguards and security costs, and utilizing the latest technologies and approaches for plant monitoring and protection.

The ARDP demonstration element supports cost-shared (up to 50% government, not less than 50% industry) demonstration projects designed to facilitate U.S. private industry's development of advanced reactors that are safe, reliable, licensable, and commercially viable. The FY 2026 Budget Request transitions oversight of the ARDP Demonstration projects from the Office of Clean Energy Demonstrations (OCED) to the Office of Nuclear Energy. The two ongoing ARDP Demonstration projects and the five Risk Reduction projects are working to overcome barriers to future deployments to unleash American energy and prosperity, through affordable, reliable, and secure energy.

Highlights of the FY 2026 Budget Request

In 2026, construction on the NRIC Demonstration of Microreactor Operations (DOME) test bed will be complete.

Oversight of the reactor demonstration elements of ARDP are transitioned from the Office of Clean Energy Demonstrations to the Office of Nuclear Energy.

With the FY 2026 funding request, funding for four of the five Risk Reduction awards is complete, at original funding profiles.

National Reactor Innovation Center ($31 million)

The National Reactor Innovation Center (NRIC) enables and accelerates the testing and demonstration of advanced reactors by utilizing the unique capabilities of U.S. national laboratories. NRIC ensures that the strategic infrastructure and assets of the national laboratories are available to enable physical validation of advanced nuclear reactor concepts, resolve technical uncertainties, and generate data relevant to safety, resilience, security, and functionality of advanced nuclear reactor concepts. NRIC works closely with R&D programs within the Office of Nuclear Energy to avoid duplication. NRIC does not conduct R&D; it ensures the connectivity necessary to enable the demonstration of selected nuclear reactor technologies and designs.

The NRIC subprogram activities include interactions with reactor developers who are considering options for demonstrating their reactor technologies as well as development of national laboratory capabilities for hosting advanced reactor demonstrations and tests. While NRIC is led by Idaho National Laboratory (INL) with significant activities at the

INL Site, resources at other national laboratories and potential nuclear reactor demonstration sites play an important role in achieving NRIC's objectives.

NRIC helps accelerate technology readiness of advanced reactors to meet the energy needs of the future. Key support to be provided by NRIC includes:

- Establishing and maintaining testing capabilities at DOE national laboratories to enable development and future demonstration of advanced reactor technologies;
- Developing complementary technologies, in conjunction with relevant Nuclear Energy R&D programs, such as application of digital engineering philosophies and development and proof of concept of advanced construction technologies, to reduce the cost and schedule risks associated with the deployment of advanced reactors;
- Assisting with environmental reviews, as appropriate, and DOE authorization related to testing of advanced reactor technologies;
- Developing a resource network of sites, facilities, and capabilities suitable for performing key R&D, experiments, tests, or fabrications, and for hosting advanced reactor demonstrations; and
- Identifying and facilitating resolution of experimental capability gaps which are vital to advanced reactor development and demonstration.

A key FY 2026 activity for NRIC includes support for establishing infrastructure for the testing of multiple advanced reactor concepts. The Demonstration and Operation of Microreactor Experiments (DOME) test bed will be capable of hosting experiments to support testing and development of microreactor technologies. DOME is located at the former Experimental Breeder Reactor II facility at INL to support this new mission. NRIC has partnered with a number of microreactor developers to complete engineering and experimental design activities to enable future testing of their technologies in DOME to generate data to support design and licensing activities. Construction of the DOME test bed is expected to be completed in 2026. Activities to support the establishment of the Laboratory for Operations and Testing in the United States (LOTUS) test bed are described in the Construction section of the ARDP program. It should be noted that Other Project Costs (OPCs) for the LOTUS project are reflected in the NRIC subprogram, while Total Estimated Costs (TECs) are reflected in line item 23-E-200, LOTUS.

Demonstration Reactors ($20 million)

The Advanced Reactor Demonstration element of ARDP supports two advanced reactor demonstrations through cost-shared (up to 50% government, not less than 50% industry) that were competitively awarded through a financial assistance solicitation. These projects are designed to facilitate U.S. private industry's development of advanced reactors that are safe, reliable, licensable, and commercially viable. The program goals include affordability in construction and operation compared to competing, alternative sources of energy in the near- and mid-term and provide significant improvements in safety, security, economics, and environmental impacts over current nuclear power plant designs. The program is designed to have the ability to design, site, license, procure, construct, and operate a fuel fabrication facility and reactor, with the ability to demonstrate a path to achieving commercial operation with a customer.

The two ARDP projects are:

- **Demonstration 1 ($10 million):** X-energy plans to demonstrate a 320 MWe, 4-unit Xe-100 High Temperature Gas-Cooled Reactor (HTGR) at the Dow Chemical Company's Long Mott Generating Station site in Seadrift, Texas.

  X-energy's FY 2026 primary activities focus on supporting the NRC's review of the Long Mott Generating Station Construction Permit Application for a nuclear-powered electrical generating and process steam plant; advancing plant detailed design towards construction readiness; initiating long-lead material procurements; supporting the NRC's review of the commercial-scale TRISO fuel fabrication facility (TX-1); beginning vertical construction of the TX-1 fuel fabrication facility in Oak Ridge, Tennessee; procuring testing equipment for installation at the Helium Test Facility and the X-energy Test Facility in Frederick, Maryland; and continuing TRISO fuel pebble irradiation test experiments at Idaho National Laboratory.

- **Demonstration 2 ($10 million)**: TerraPower, LLC, plans to demonstrate a 345/500 MWe Natrium Sodium Fast Reactor (SFR) commercial plant at the Kemmerer, Wyoming demonstration site.

TerraPower's FY 2026 primary activities focus on supporting the NRC's review of the Kemmerer Unit 1 Construction Permit Application; initiating site earthworks for Kemmerer Unit 1 construction; advancing the plant design to Detailed Design level of maturity; constructing the Large Sodium Test and Fill facility; construction of the Kemmerer Training Facility; establishing a HALEU procurement pathway; establishing a commercial arrangement with a utility partner and the associated operations readiness plan; initiating long lead procurements for the major designed Nuclear Island equipment; and progressing the design and licensing to construct a large scale HALEU fuel fabrication facility.

Risk Reduction for Future Demonstrations ($72 million)

The Risk Reduction for Future Demonstrations subprogram supports advanced reactor concepts with the potential for future demonstration through cost-shared (up to 80% government, not less than 20% industry) competitively awarded (through a financial assistance solicitation) projects that are designed to maximize the utility of the results across the nuclear energy industry. The projects are aimed at reducing risk and technical uncertainty for a broad range of advanced reactor designs. Project activities may include R&D to address technical challenges associated with development of technologies and methods to improve the timelines for advanced reactor deployments; the cost and schedule for delivery of nuclear products, services, and capabilities supporting these nuclear technologies; design and engineering processes; and resolution of certification challenges potentially impeding the introduction of these technologies into the marketplace. This subprogram coordinates closely with the Reactor Concepts Research, Development & Demonstration program and other relevant programs to avoid duplication, leverage existing expertise, and maximize synergies.

The five projects are:

- Kairos Power, LLC (Alameda, CA) will work to design, construct, and operate its Hermes reduced-scale test reactor. Hermes is intended to lead to the development of Kairos Power's commercial-scale fluoride salt-cooled high temperature reactor (FHR), a novel advanced nuclear reactor technology that leverages TRI-structural ISOtropic particle fuel (TRISO) fuel in pebble form combined with a low-pressure fluoride salt coolant;
- Westinghouse Electric Company, LLC (Cranberry Township, PA) will advance the design of a heat pipe-cooled microreactor;
- BWXT Advanced Technologies, LLC (Lynchburg, VA) will mature a commercially viable transportable microreactor conceptual design focused on using TRISO fuel particles to achieve higher uranium loading and an improved core design using a silicon carbide (SiC) matrix;
- Holtec Government Services, LLC (Camden, NJ) will focus on early-stage design, engineering, and licensing activities to accelerate the development of its light water-cooled small modular reactor (SMR); and
- Southern Company Services Inc. (Birmingham, AL) will lead a project to design, construct, and operate the Molten Chloride Reactor Experiment (MCRE), a critical nuclear test supporting molten salt reactor systems and components demonstrations.

FY 2026 activities focus on continuing design, manufacturing, and construction activities; supporting further interactions with the NRC on high impact regulatory related topics; conducting activities to resolve technical, operational, and regulatory challenges; and developing and executing plans for establishing infrastructure and support capabilities to enable execution of the Risk Reduction projects and future commercialization activities.

Regulatory Development ($15 million)

The Regulatory Development subprogram coordinates with NRC and industry to address and resolve key regulatory framework issues that directly impact the "critical path" to advanced reactor demonstration and deployment. Part of the subprogram focuses on regulatory modernization activities such as developing adaptations of light water reactor (LWR)-based regulations for non-LWR advanced reactors, finalizing the establishment of risk-informed and performance-based license application guidance, and establishing clear expectations for license application content and review criteria. The Regulatory Development subprogram supports limited R&D aimed at producing broadly applicable results than can be used by an array of private sector companies to inform their regulatory requirements. Design-specific regulatory gaps for advanced reactors, including fast reactors, gas-cooled reactors, and molten salt reactors, are also addressed. The Regulatory Development Program is supporting key activities to accelerate advanced reactor licensing including exploring the use of Artificial Intelligence to reduce licensing times. In FY 2026, the Regulatory Development subprogram will continue to provide resources for cost-share grants to applicants for the purpose of funding a portion of NRC fees for pre-application and licensing application review activities.

Advanced Reactor Safeguards and Security ($9 million)

The Advanced Reactor Safeguards and Security (ARSS) subprogram evaluates safeguards and security issues unique to advanced reactor designs. R&D is strongly aligned with vendor needs to drastically reduce physical and cybersecurity costs and inform materials accountancy design for new fuels and reactor types. The research within the ARSS subprogram supports DOE efforts to enable the rapid deployment and export of next-generation nuclear technology and improves U.S. energy security. ARSS promotes robust efficient physical security and cybersecurity protection for advanced reactors through new technologies and approaches. Program research also provides assurance that nuclear material will be tracked and secured from theft or diversion domestically.

All three major elements, physical security, cybersecurity, material control and accountability (MC&A), work to mature areas of R&D and program activities through vendor engagements. This work is completed at DOE national laboratories and generates lessons learned and deliverables to share broadly with the advanced reactor community. The ARSS subprogram also coordinates with the NRC, Nuclear Energy Institute (NEI), National Nuclear Security Administration (NNSA), nuclear industry, and university community to collaborate on the development of technologies and methods to ensure security of advanced reactors.

Key FY 2026 activities include expanding cybersecurity work toward demonstration of wireless remote monitoring and operations, developing physical protection system, MC&A, and Cyber by design recommendations reports for all classes of advanced reactors, demonstrating new measurement technologies on surrogate salt materials representative of molten salt reactor fuel, and collaboration with the NRC on consequence analysis for microreactors to tailor on-site responder requirements.

Construction: 23-E-200, Laboratory for Operations and Testing in the United States ($7.559 million)

23-E-200, Laboratory for Operations and Testing in the United States (LOTUS)
The LOTUS Project will enable and support the development and deployment of advanced nuclear systems by providing the infrastructure for advanced reactor developers to securely test fueled experiments that utilize Safeguards Category I materials for operation. First-of-a-kind nuclear technology developers need a location for testing, validating, and maturing new technologies or concepts, and for validating the safety and workability of systems or components individually or as part of the overall system. Advanced reactor developers also need to generate data on key phenomena relevant to the design and safe operation of their designs to aid in future licensing and commercial deployment of these technologies. Although not required for the commercial concepts, some experiments require higher enrichment fuel to keep the size of the experiment small while ensuring that neutronics and thermal hydraulics are representative of commercial designs. The LOTUS Project will make available a robust facility that can provide the appropriate containment capabilities and supporting infrastructure. The anticipated first user of the NRIC-LOTUS test bed is the Molten Chloride Reactor Experiment (MCRE) being developed by Southern Company Services, TerraPower and INL.

On March 21, 2025, the Secretary of Energy issued a memorandum to Heads of Departmental Elements and National Laboratory Directors revising delegated project authority within DOE Order 413.3B from $50 million to $300 million specific to the National Laboratories managed under Management and Operating Contracts. Given the cost range for the LOTUS project is under $300 million, project authority was delegated to INL. DOE will continue to employ project management best practices to ensure judicious management of the project while ensuring efficiency and flexibility in successfully executing this critical project.

The FY 2026 budget request supports initiation of construction activities, and continuation of long lead procurements.

Advanced Reactor Demonstration Program
Funding ($K)

	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs FY 2025 Enacted	
				$	%
National Reactor Innovation Center	63,000	63,000	31,000	-32,000	-50.8%
Demonstration 1	30,000	30,000	10,000	-20,000	-66.6%
Demonstration 2	30,000	30,000	10,000	-20,000	-66.6%
Risk Reduction for Future Demonstration	137,222	137,222	72,000	-65,222	-47.5%
Regulatory Development	14,030	17,030	15,000	-2,030	-11.9%
Advanced Reactor Safeguards and Security	9,172	9,172	9,000	-172	-1.9%
Construction: 23-E-200, LOTUS	32,000	16,112	7,559	-8,553	-53.1%
Total, Advanced Reactors Demonstration Program	**315,424**	**302,536**	**154,559**	**-147,977**	**-48.9%**

Explanation of Changes for Advanced Reactor Demonstration Program

The decrease in the NRIC budget from $63 million to $31 million reflects completion of construction of the DOME test bed.

The decrease in the Demonstration 1 and Demonstration 2 project budgets from $30 million to $10 million reflects an intent to continue to apply IIJA appropriations in FY 2026.

The decrease in the Risk Reduction for Future Demonstrations budget from $137.222 million to $72 million reflects completion of funding for four of the five Risk Reduction projects, based on currently approved funding profiles.

The decrease in the Regulatory Development budget from $17.03 million to $15 million reflects resolution of some key advanced reactor policy issues as advanced reactors move to the demonstration phase.

The decrease in the Advanced Reactor Safeguards and Security budget from $9.172 million to $9 million reflects successful completion of a vendor engagement to validate program research in a real-world environment.

Advanced Reactor Demonstration Program
Construction Projects Summary ($K)

	Total	Prior Years	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs FY 2025 Enacted
23-E-200, LOTUS, INL						
Total Estimated Cost (TEC)	77,923	22,252	32,000	16,112	7,559	-8,553
Other Project Costs (OPC)[1]	20,277	5,557	3,000	2,000	8,500	+6,500
Total Project Cost (TPC) Project Number 23-E-200	**98,200**	**27,809**	**35,000**	**18,112**	**16,059**	**-2,053**
Total All Construction Projects						
Total Estimated Cost (TEC)	77,923	22,252	32,000	16,112	7,559	-8,553
Total Other Project Costs (OPC)	20,277	5,557	3,000	2,000	8,500	+6,500
Total Project Cost (TPC) All Construction Projects	**98,200**	**27,809**	**35,000**	**18,112**	**16,059**	**-2,053**

[1] OPC funding for 23-E-200, LOTUS is included within the National Reactor Innovation Center subprogram line.

23-E-200, Laboratory for Operations and Testing in the United States
Idaho National Laboratory
Project is for Design and Construction

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

Summary

The fiscal year (FY) 2026 Budget Request for the Laboratory for Operations and Testing in the United States (LOTUS) project is $7,559,000 of Total Estimated Cost (TEC) funding and $8,500,000 of Other Project Costs (OPC) funding. The Total Project Cost (TPC) range for the design and construction of LOTUS is $65,600,000 to $98,200,000 and the project completion date estimate of 2Q FY 2030. The LOTUS project will provide a dynamic test bed to support testing of fueled experiments consistent with DOE safety and security requirements.

The requested capital funding in FY 2026 supports the initiation of construction activities following approval of the performance baseline and approval of start of construction, and continuation of long lead procurements.

Significant Changes

This Construction Project Data Sheet (CPDS) is an update of the FY 2025 CPDS and does not include a new start for FY 2026.

The project achieved Approval of Alternative Selection and Cost Range on June 1, 2023. The approved alternative is to modify the existing Zero Power Physics Reactor (ZPPR) facility at the Materials and Fuels Complex, Idaho National Laboratory (INL), and the TPC range was defined as $65,600,000 to $98,200,000, with a project completion date of 2Q FY 2030, including schedule reserve and contingency. The project completed final design on September 18, 2024, and has received multiple construction subcontract bids currently under evaluation.

The final design reflects a better understanding of the increased complexity associated with modification of the existing facility, including additional requirements for meeting nuclear facility seismic requirements, establishment of the new access tunnel to support the installation of advanced reactors, and retaining the confinement capability of the structure. There was a 6-month delay in completion of preliminary/final design, primarily driven by the detailed seismic analysis and design required to ensure that the existing structure could meet current nuclear facility requirements. This delay has resulted in project cost escalation.

The received construction bids reflect increased costs associated with excavation and more extensive shoring of the new access tunnel necessary to maintain the structural integrity of immediately adjacent nuclear material storage capabilities; the installation of micro-piles to underlying basalt to provide seismic stability of the new access tunnel and hatch; additional rock removal and drainage based on improved understanding of field conditions; increased costs due to overall market demand for fabricated items, specialty nuclear components (e.g., isolation valves), and electrical/instrumentation and controls components; the higher costs associated with conducting extensive construction activities within a highly secure area; and prevailing regional construction market conditions.

Given the significantly increased costs reflected by the received construction bids, the project is not updating Total Project Costs in FY 2026. DOE is carefully reviewing and considering the construction bids, performing an Independent Cost Estimate against the received bids, and considering alternatives with respect to the May 23, 2025, Executive Order 14301 *Reforming Nuclear Reactor Testing at the Department of Energy*.

On February 27, 2025, the project received Approval of Long Lead Procurement, and initiated a phased procurement approach to mitigate risks and adequately integrate the delivery of certain items into the construction phase.

On March 21, 2025, the Secretary of Energy issued a memorandum to Heads of Departmental Elements and National Laboratory Directors revising delegated project authority within DOE Order 413.3B from $50 million to $300 million specific to the National Laboratories managed under Management and Operating Contracts. Given the cost range for the LOTUS project is under $300 million, project authority was delegated to Idaho National Laboratory. DOE will continue to employ project management best practices to ensure judicious management of the project while ensuring efficiency and flexibility in successfully executing this critical project.

Critical Milestone History

(Fiscal Quarter or Date)

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	Final Design Complete	CD-2/3	D&D Complete	CD-4
FY 2022	3/8/2022	1/13/2022	TBD	TBD	TBD	N/A	TBD
FY 2023	3/8/2022	1/13/2022	TBD	TBD	TBD	N/A	TBD
FY 2024	3/8/2022	1/13/2022	TBD	TBD	TBD	N/A	TBD
FY 2025	3/8/2022	1/13/2022	6/1/2023	3Q FY 2024	2Q FY 2025	N/A	2Q FY 2030
FY 2026	3/8/2022	1/13/2022	6/1/2023	9/18/2024	1Q FY 2026	N/A	2Q 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
Final Design Complete – Estimated/Actual date the project design will be/was complete(d)
CD-2/3 – Approve Performance Baseline, and Approve Start of Construction
Construction Complete – Completion of construction
CD-4 – Approve Start of Operations or Project Closeout

Fiscal Year	Performance Baseline Validation	CD-3A	CD-3B
FY 2022	TBD	N/A	N/A
FY 2023	TBD	N/A	N/A
FY 2024	TBD	N/A	N/A
FY 2025	TBD	N/A	N/A
FY 2026	TBD	2/27/2025	N/A

CD-3A – Approve Long-Lead Procurements, Original Scope
CD-3B – Approve Long-Lead Procurements, Revised Scope (as needed)

Project Cost History

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC, Total	TPC
FY 2022	10,992	52,231	63,223	33,777	97,000
FY 2023	10,992	52,231	63,223	33,777	97,000
FY 2024	10,992	52,231	63,223	33,777	97,000
FY 2025	15,600	57,400	73,000	25,200	98,200 [a]
FY 2026	11,496	66,427	77,923	20,277	98,200 [a]

a. Project costs based on approved CD-1

No construction will be performed until the project performance baseline is validated and start of construction is approved.

2. Project Scope and Justification

Scope

Laboratory for Operations and Testing in the United States (LOTUS) will provide a dynamic test bed to support testing of fueled experiments. The test bed will be designed and constructed to meet the following minimum requirements:

- The test bed capability must have the supporting infrastructure to safely test fueled advanced reactor experiments and interface, as necessary, with reactor support systems.

- The test bed will provide approximately 10,000 square feet of new constructed area to support access roads and concrete pads, not enclosed or covered, for necessary equipment.
- The test bed capability must be able to satisfy Natural Phenomena Hazard (NPH) criteria. As a Hazard Category 2 nuclear facility, the test bed must meet the NPH requirements of DOE Order 420.1C, "Facility Safety", including seismic, wind, flood, and volcanic hazards. Design and construction must ensure that systems, structures, and components will perform safety functions during and after design basis NPH events.
- The test bed capability must be able to provide confinement capability during postulated accident and design basis events. Specifically, it must prevent or control radioactive material release to the environment either in operation or from an accident; and it must ensure air supply and exhaust are controlled, and typically filtered. Confinement may be provided by some combination of leak tightness in the structure and active ventilation to maintain a negative pressure.
- The test bed capability must have the infrastructure (physical and resource) to appropriately control safeguards category I materials.
- The test bed capability must provide the minimum features necessary to conduct an experiment to validate an advanced reactor design. The test bed capability must be available for advanced reactor testing for a minimum of 20 years from the start of operation.

Key Performance Parameters (KPPs)

A KPP is a vital characteristic, function, requirement, or design basis that, if changed, would have a major impact on the facility or system performance, scope, schedule, cost, risk, or the ability of an interfacing project to meet its mission requirements. The preliminary threshold KPPs represent the minimum acceptable scope for successful delivery of the Laboratory for Operations and Testing in the United States (LOTUS) project. Achievement of KPPs will be a prerequisite for approval of project completion. Final KPPs will be established when the project's Performance Baseline is established.

Preliminary Threshold KPPs

Performance Measure	Threshold
Provide the facility infrastructure to support the operation of experimental/test reactors that utilize fuels requiring enhanced security requirements.	Establishment of core infrastructure needed to support operation of experimental/test reactors in the test bed, with clearly defined boundaries: • Electrical supply and back-up power (as necessary) • Ventilation/exhaust for test bed cell • Support systems (e.g., compressed air, argon, fire protection, oxygen monitoring, criticality monitoring, chilled water loop system) • Establishment of control room area with appropriate data connections
Establish a Hazard Category 2 nuclear facility capable of supporting tests using safeguards category I quantities of material	Establishment of equipment access capability with required confinement and security features Approved Safety Analysis Report addressing test bed capability Completion of DOE Operational Readiness Review for the test bed capability in accordance with DOE Order 425.1E Completion of Vulnerability Assessment demonstrating compliance with applicable security requirements

Completion of operational readiness activities for first reactor tests utilizing LOTUS will not be requisite for determining successful project completion.

Funds appropriated under this data sheet may be used to provide independent assessments related to project planning and execution.

Justification

Following the advent of nuclear power generation, the United States was an international leader in the development and testing of advanced nuclear reactor technologies. DOE and its predecessor organizations appropriately provided nuclear fuels and materials development capabilities and large-scale demonstration facilities in support of currently deployed nuclear reactor technologies. However, the existing industrial and DOE test bed facilities are not currently capable of supporting fueled advanced reactor tests and international facilities are not an option due to concerns with access, transportation, and technical equivalencies. Lack of domestic advanced reactor test bed capabilities is hampering the U.S. ability to move forward in the development of next generation nuclear reactors.

The Nuclear Energy Innovation Capabilities Act of 2017 (P.L. 115-248) (NEICA), Section 958, Enabling Nuclear Energy Innovation, authorized the National Reactor Innovation Center (NRIC) as a program to enable the testing and demonstration of reactor concepts to be proposed and funded, in whole or in part, by the private sector. As a result, the DOE Office of Nuclear Energy launched the NRIC in August 2019. NRIC is charged with developing the infrastructure needed for the testing and demonstration of multiple advanced reactor concepts. To fulfill that charge, NRIC has been exploring options to develop test bed capabilities to provide industry partners the infrastructure to startup, test, and operate fueled advanced reactor experiments in a safe and economical manner.

Establishment of the LOTUS capability will provide industry with the infrastructure necessary to support development and testing of fueled experiments requiring safeguards category I materials for operation. Testing of these reactor experiments will provide real data that can be used to validate models and support subsequent licensing activities to bring the reactors to market.

Establishment of the test bed is consistent with Congressional direction provided in the joint explanatory statements accompanying the Consolidated Appropriations Acts of 2021 and 2022.

3. Financial Schedule

(Dollars in Thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2022	2,252	2,252	0
FY 2023	8,992	8,992	1,529
FY 2024	252	252	9,967
Total, Design (TEC)	**11,496**	**11,496**	**11,496**
Construction			
FY 2023	11,008	11,008	0
FY 2024	31,748	31,748	0
FY 2025	16,112	16,112	5,000
FY 2026	7,559	7,559	46,059
Outyears	0	0	15,368
Total, Construction (TEC)	**66,427**	**66,427**	**66,427**
Total Estimated Costs (TEC)			
FY 2022	2,252	2,252	0
FY 2023	20,000	20,000	1,529
FY 2024	32,000	32,000	9,967
FY 2025	16,112	16,112	5,000
FY 2026	7,559	7,559	46,059

	Budget Authority (Appropriations)	Obligations	Costs
Outyears	0	0	15,368
Total TEC	**77,923**	**77,923**	**77,923**
Other Project Costs			
FY 2021	3,957	3,957	1,037
FY 2022	600	600	2,674
FY 2023	1,000	1,000	802
FY 2024	3,000	3,000	658
FY 2025	2,000	2,000	2,100
FY 2026	8,500	8,500	8,700
Outyears	1,220	1,220	4,306
Total OPC	**20,277**	**20,277**	**20,277**
Total Project Costs (TPC)			
FY 2021	3,957	3,957	1,037
FY 2022	2,852	2,852	2,674
FY 2023	21,000	21,000	2,331
FY 2024	35,000	35,000	10,625
FY 2025	20,748	20,748	7,100
FY 2026	16,059	16,059	54,759
Outyears	1,220	1,220	19,674
Grand Total	**98,200**	**98,200**	**98,200**

4. Details of Project Cost Estimate

(Budget Authority in Thousands of Dollars)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	11,496	13,180	TBD
Contingency	0	2,420	TBD
Total, Design	11,496	15,600	TBD
Construction			
Site Work	2,735	2,735	TBD
Equipment	0	0	TBD
Construction	43,285	43,285	TBD
Other, as needed	0	0	TBD
Contingency	20,407	11,380	TBD
Total, Construction	66,427	57,400	TBD

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Other TEC (if any)	N/A	N/A	N/A
Cold Startup	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, Other TEC	N/A	N/A	N/A
Total Estimated Cost	77,923	73,000	TBD
Contingency, TEC	20,407	13,800	TBD
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Design/Planning	4,620	4,620	TBD
Other OPC Costs	12,757	17,680	TBD
Contingency	2,900	2,900	TBD
Total, OPC	20,277	25,200	TBD
Contingency, OPC	2,900	2,900	TBD
Total Project Cost	98,200	98,200	TBD
Total Contingency (TEC+OPC)	23,307	16,700	TBD

5. Schedule of Appropriation Requests

(Dollars in Thousands)

Request Year	Type	Prior Years	FY 2023	FY 2024	FY 2025	FY 2026	Outyears	Total
FY 2022	TEC	2,000	20,000	32,000	N/A	N/A	9,223	63,223
	OPC	4,557	1,000	8,000	N/A	N/A	20,220	33,777
	TPC	6,557	21,000	40,000	N/A	N/A	29,443	97,000
FY 2023	TEC	2,000	20,000	32,000	N/A	N/A	9,223	63,223
	OPC	4,557	1,000	8,000	N/A	N/A	20,220	33,777
	TPC	6,557	21,000	40,000	N/A	N/A	29,443	97,000
FY 2024	TEC	2,000	20,000	32,000	N/A	N/A	9,223	63,223
	OPC	4,557	1,000	8,000	N/A	N/A	20,220	33,777
	TPC	6,557	21,000	40,000	N/A	N/A	29,443	97,000
FY 2025	TEC	2,252	20,000	32,000	18,748	N/A	0	73,000
	OPC	4,557	1,000	3,000	9,000	N/A	7,643	25,200
	TPC	6,809	21,000	35,000	27,748	N/A	7,643	98,200
FY 2026	TEC	2,252	20,000	32,000	16,112	7,559	0	77,923
	OPC	4,557	1,000	3,000	2,000	8,500	1,220	20,277
	TPC	6,809	21,000	35,000	18,112	16,059	1,220	98,200

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	2Q FY 2030
Expected Useful Life (number of years)	20

Expected Future Start of D&D of this capital asset (fiscal quarter)	2Q FY 2050

Related Funding Requirements
(Budget Authority in Thousands of Dollars)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations and Maintenance	22,412	22,412	575,000	575,000

Life-cycle operations and maintenance costs include escalation.

7. D&D Information

The new area being constructed in this project is modifying an existing facility.

	Square Feet
New area being constructed by this project at INL	Up to 10,000
Area of D&D in this project at INL	0
Area at INL 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

Site location, building name or numbers, and square footages of existing facilities to be replaced: N/A

As an advanced reactor test bed (laboratory facility), the proposed LOTUS is not subject to Freeze the Footprint (>50% lab space).

8. Acquisition Approach

As a Hazard Category 2 nuclear facility, design, and construction of the LOTUS must be integrated with ongoing nuclear operations activities. Design and construction must also be coordinated/integrated with nuclear research and development programs. A design-bid-build project delivery method managed by the INL management and operating contractor will be used for the design and construction of LOTUS. A firm, fixed-price construction subcontract is anticipated for construction of the LOTUS test bed.

Infrastructure

Overview

Infrastructure consists of the Idaho National Laboratory (INL) Facilities Operations and Maintenance (IFM) subprogram.

The mission of the IFM subprogram is to manage the planning, acquisition, operation, maintenance, and disposition of the multi-program nuclear facilities and capabilities owned by the Office of Nuclear Energy (NE) along with the supporting infrastructure at INL. The IFM subprogram maintains the Department of Energy (DOE) mission-supporting facilities and capabilities at INL in a safe and compliant status (with DOE Orders, federal laws and regulations, and state agreements) to enable technological advancement in the existing nuclear fleet, advanced reactor pipeline, and fuel cycle missions. These facilities and capabilities support the NE research and development (R&D) necessary to revitalize and unleash nuclear energy in the United States. These key assets also support testing of naval reactor fuels, reactor core components, and a diverse range of national security technology programs for the National Nuclear Security Administration (NNSA), isotope production for the Office of Science, and other federal agencies in critical infrastructure protection, nuclear nonproliferation, and incident response. The IFM subprogram integrates and closely coordinates with research programs to ensure proper alignment and prioritization of infrastructure investments, as well as availability of infrastructure for programmatic work.

Highlights of the FY 2026 Budget Request

In FY 2026, the IFM subprogram will focus on:

- Maintaining safe and compliant operation of INL nuclear research reactors, non-reactor nuclear facilities, and radiological research facilities to support a wide range of customers while continuing investments in aging infrastructure at both the Advanced Test Reactor (ATR) Complex and Materials and Fuels Complex (MFC) to improve reliability.
- Continuing community and technical activities supporting the Agreement in Principle (AIP) with the Shoshone-Bannock Tribes, the Idaho Department of Environmental Quality, and environmental reviews and data collection to support future permits.
- Continuing compliance with Federal and State environmental laws and regulations applicable to INL as well as the 1995 Settlement Agreement with the State of Idaho, the Supplemental Agreement signed by DOE and the State of Idaho in November 2019, and the Waiver of Section K.1 of the 1995 Settlement Agreement signed in April 2025.
- In FY 2026, the Sample Preparation Laboratory (SPL) will begin operations following project completion and is accounted for under INL Non-Reactor Nuclear Research Facility Operations and Maintenance.

INL Nuclear Research Reactor Operations and Maintenance ($127,076,197)

This subcategory provides funding to support operations and maintenance of the nuclear research reactors at the ATR Complex and MFC, including the ATR, the ATR Critical Facility (ATRC), the Neutron Radiography Reactor (NRAD), and the Transient Reactor Test Facility (TREAT). ATR is the primary research reactor at INL, supporting test programs and experiments sponsored by the Office of Nuclear Energy (NE), the Naval Reactors (NR) Program, and the National Nuclear Security Administration (NNSA). ATR is also the primary scientific capability of the Nuclear Science User Facilities (NSUF) and supports universities, laboratories, and private industry. There continues to be significant R&D demand for thermal neutron irradiation at ATRC and neutron radiography and small component test irradiation at NRAD. The TREAT reactor, an air-cooled thermal spectrum test facility, continues to address technical challenges for reactor fuels related to nuclear fuel performance and qualifications. All programmatic work is funded by sponsoring federal programs, and cost to other users is determined in accordance with DOE regulations and depends upon the demands on the reactor and nature of the user

.

Activities for this subcategory in FY 2026 include:

- Maintaining ATR availability at 80% with a target of 180 irradiation days for FY 2026 to satisfy the needs of ATR users, and continuing investments to improve ATR reliability through modernization, refurbishments, and replacements of reactor systems and components, such as procuring core sets of beryllium and associated tooling.
- Continuing thermal neutron irradiation at ATRC, neutron radiography and small component testing at NRAD, and transient testing operations at TREAT consistent with approved research plans.

- Continuing evaluation and planning for modernizing or replacing end-of-life thermal neutron irradiation capabilities.

INL Non-Reactor Nuclear Research Facility Operations and Maintenance ($176,162,008)

This subcategory provides funding for operations, maintenance, and support of non-reactor nuclear and radiological research facilities primarily located at the MFC. Activities within this category sustain or improve unique nuclear and radiological capabilities essential to multiple NE R&D programs. The non-reactor nuclear research facilities support core programmatic capabilities for inspecting, fabricating, and processing a myriad of radioactive and non-radioactive materials including:

- Post Irradiation Examination (PIE) and Fresh Fuel Characterization – Receipt of irradiated fuels and materials, non-destructive examinations, destructive examinations and analyses, and mechanical testing of highly radioactive materials.
    - In FY 2026, the Sample Preparation Laboratory will begin operations following project completion and will complete the suite of facilities (along with the Hot Fuels Examination Facility and Irradiated Materials Characterization Laboratory) fulfilling near-term advanced post-irradiation examination needs that will serve as a center for advanced fuels and materials characterization, as well as development of new processes, tools, and instruments to further research. The initiation of SPL operations continues nuclear capability expansion in line with NRIC and DOE programmatic objectives and provides world-class structural material analysis capabilities focusing on non-fuel sample preparation, mechanical properties and failure modes, and micro/nano structural materials characterization.
- Experimental Fuel Fabrication – R&D on fabrication of multiple fuel types at various enrichment levels.
- Advanced Separation and Waste Form – Separation, pre-treatment technology development, electrochemical separation, and engineering scale waste form development.

This subcategory also provides funding for management of NE-owned special nuclear material (SNM) and support for Nuclear Regulatory Commission cask certifications. Activities for this subcategory in FY 2026 include:

- Operating and maintaining MFC infrastructure, facilities, and equipment to support facility availability for programmatic activities.
- Performing maintenance and refurbishment activities within MFC nuclear facilities and infrastructure consistent with the approved safety basis and continuing prioritized infrastructure investments to improve reliability and availability of key MFC facilities.
- Continuing off-site disposition of surplus NE-owned SNM consistent with the May 23, 2025, Executive Orders *Deploying Advanced Nuclear Reactor Technologies for National Security* and *Reinvigorating the Nuclear Industrial Base,* as well as programmatic needs and approved nuclear material allotment forecasts.

INL Engineering and Support Facility Operations and Maintenance ($5,132,795)

This subcategory provides funding for community and technical activities supporting the Agreement in Principle (AIP) with the Shoshone-Bannock Tribes, the Idaho Department of Environmental Quality, and environmental reviews and data collection to support future permits. This subcategory also funds Payment in Lieu of Taxes (PILT), Institute of Nuclear Power Operations, and Departmental cross-cutting infrastructure reporting requirements. Activities for this subcategory in FY 2026 include:

- Continuing to support federally funded activities to maintain operations at INL, such as PILT; environmental review and data collection to support future permits; and community support for local Shoshone-Bannock Tribes.

INL Regulatory Compliance ($17,629,000)

The subcategory provides funding for activities for continued compliance with Federal and State environmental laws and other regulations applicable to INL. Compliance activities focus on air, soil, and water monitoring and waste disposal consistent with Federal and State permit requirements and agreements such as the INL Site Treatment Plan. Regulatory activities also include efforts that support compliance with the 1995 Settlement Agreement with the State of Idaho, which governs management and disposition of spent nuclear fuel and transuranic wastes at INL. In November 2019, DOE

and the State of Idaho signed a Supplemental Agreement to the 1995 Idaho Settlement Agreement that reaffirmed DOE's and Idaho's commitment to remove Cold War legacy waste and special nuclear materials from Idaho. In April 2025, a Waiver of Section K.1 of the 1995 Settlement Agreement was signed updating the agreement. Activities for this subcategory in FY 2026 include:

- Continuing regulatory compliance program management.
- Meeting the INL Site Treatment Plan milestone for annual treatment of two cubic meters of mixed low-level waste (MLLW).
- Processing a minimum of 8 treatment batches of EBR-II fuel.
- Conducting environmental surveillance and monitoring activities.

Infrastructure
Funding ($K) (Non-Comparable)

	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs FY 2025 Enacted	
				$	%
Infrastructure					
INL Facilities Operations and Maintenance[1]	326,000	326,000	326,000	0	0%
Total, Infrastructure	**326,000**	**326,000**	**326,000**	**0**	**0%**

Explanation of Changes for Infrastructure
There is no change in total funding between INL Facilities Operations and Maintenance FY 2026 Request and FY 2025 Enacted. There are changes at the subcategory level that reflect the following shifts in funding priorities:

- The increase in funding for INL Nuclear Research Reactor Operations and Maintenance reflects continuing investments to improve ATR reliability through modernization, refurbishments, and replacements of reactor systems and components, such as procuring core sets of beryllium and associated tooling.
- The decrease in funding for INL Non-Reactor Nuclear Research Facility Operations and Maintenance reflects limiting prioritized MFC infrastructure investments to support the beginning of SPL full operations and other IFM subcategory priorities.
- The decrease in funding for INL Engineering and Support Facility Operations and Maintenance reflects decreased costs associated with activities that underpin agreements supporting work at INL.
- The increase in funding for INL Regulatory Compliance reflects continued compliance with Federal and State environmental laws and other regulations applicable to INL, including compliance with the INL Site Treatment Plan milestones and the 1995 Settlement Agreement with the State of Idaho, its 2019 Supplemental Agreement, and the April 2025 Waiver of Section K.1.

[1] Funding does not reflect the transfer of $92,800,000 in FY 2024 and FY 2025 from Naval Reactors for maintenance and operation of the Advanced Test Reactor.

Idaho Sitewide Safeguards and Security

Overview

The Idaho Sitewide Safeguards and Security (S&S) program enables Office of Nuclear Energy (NE) research and development (R&D) missions at Idaho National Laboratory (INL) by securing nuclear material, classified matter, and other vital assets from theft, diversion, espionage, unauthorized access, and other hostile acts that could cause unacceptable impacts to national security or the health and safety of the public. Located on an 890-square-mile site in eastern Idaho, INL serves as the lead nuclear energy research and development laboratory, advancing nuclear energy, national security, and other applied energy solutions in support of nuclear energy objectives. The Idaho Sitewide Safeguards and Security program supports the NE mission by providing a safe and secure environment for critical innovation and nuclear development activities.

The FY 2026 Budget Request provides direct funding for NE's S&S base program. Strategic Partnership Projects (SPP) contribute an allocable share through full cost recovery. Extraordinary security requirements, such as dedicated security for non-NE infrastructure and special projects or exercises, will be funded by SPP customers and recovered by the S&S program. Other Department of Energy (DOE) programs at INL are responsible for directly funding their S&S costs.

Highlights of the FY 2026 Budget Request

In FY 2026, the S&S program will maintain high confidence in the protection of NE-owned INL assets and provide excellent customer service through strategic, performance-based integration of advanced technologies and specialized security personnel, proactive systems maintenance, and a robust cybersecurity program. Key investment areas include protecting special nuclear material (SNM), deploying emerging security technologies, and enhancing cybersecurity capabilities to focus on the critical task of deterring, responding to, and neutralizing threats.

Program Initiatives

The Idaho Sitewide Safeguards and Security program is split into the following security disciplines:

- **Protective Forces:** Provides security personnel 24/7 across the site to deter, detect, delay, and respond to threats, ensuring asset protection during normal and emergency conditions.
- **Security Systems:** Maintains and tests physical security systems, including intrusion detection, access control, barriers, lighting, and other security equipment.
- **Information Security:** Protects and controls classified and sensitive information through various measures, including technical security counter measures and controlled unclassified information programs.
- **Cybersecurity:** Secures classified and unclassified information and electronic operations using a risk-based approach, protecting against data loss or compromise.
- **Personnel Security:** Manages access to sensitive information and positions through clearances, security awareness, U.S. citizen and foreign visitor control, the Human Reliability Program and psychological/medical assessment programs.
- **Material Control and Accountability (MC&A):** Controls and accounts for special nuclear materials to prevent diversion.
- **Program Management:** Provides policy oversight, security planning, vulnerability assessments, incident investigations, and ensures program compliance with Departmental security requirements.

Idaho Sitewide Safeguards and Security
Funding ($K)

	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request	FY 2026 Request vs FY 2025 Enacted	
				$	%
Idaho Sitewide Safeguards and Security					
Protective Forces	93,210	98,464	103,847	+5,383	+6%
Security Systems	14,203	14,420	15,247	+827	+6%
Information Security	4,893	3,100	-	-3,100	-100%
Cybersecurity	25,916	23,916	27,133	+3,217	+14%
Personnel Security	5,953	7,300	-	-7,300	-100%
Material Control & Accountability	7,825	7,400	8,173	+773	+10%
Program Management	8,000	5,400	5,600	+200	+4%
Total, Idaho Sitewide Safeguards and Security	**160,000**	**160,000**	**160,000**	**-**	**-%**

Explanation of Changes for Idaho Sitewide Safeguards and Security

The FY 2026 request supports investments in Protective Forces and Cybersecurity to meet operational demands and respond to complex threats. Subprogram level changes are summarized below:

- **Protective Forces:** Increase reflects costs to maintain staffing levels and associated equipment consistent with Departmental security requirements and labor wage agreements.
- **Cybersecurity:** The increase reflects investments in artificial intelligence algorithms to improve cybersecurity defense capabilities across the laboratory.
- **Information Security:** This request level represents a shift to cost recovery.
- **Personnel Security:** This request level represents a shift to cost recovery.

Idaho Sitewide Safeguard and Security Reimbursable Costs

The FY 2026 Budget Request provides direct funding for NE's S&S base program. Strategic Partnership Projects (SPP) contribute an allocable share through full cost recovery. Starting in FY 2026, the Information and Personnel Security functions will transition from direct funding to full cost recovery given the transactional nature of the work. Information regarding SPP full cost recovery estimates is provided on the table below:

($K)

	FY 2024	FY 2025	FY 2026	FY 2026 Request vs FY 2025 Enacted	
				$	%
Idaho National Laboratory	12,852	16,035	30,234	+14,199	+89%

Program Direction

Overview

Program Direction provides the federal staffing resources and associated costs required to support the overall direction and execution of the Office of Nuclear Energy (NE) programs. NE has staff strategically located in multiple locations: Washington, D.C. Headquarters, Nevada Field Office, and the Idaho Operations Office. Activities within the site offices support inherently federal functions that facilitate the efficient execution of Department of Energy (DOE) programs or directly execute DOE mandated safety, security, business functions, and public outreach. In addition to NE federal personnel, Program Direction supports select federal staff and support for the Office of Human Capital Service Center.

The Support Services subprogram allows the Department to cost-effectively hire the best available industry experts to support federal staff in managing the nuclear programs and complex activities. The ability to acquire expertise quickly and on an "as needed basis" provides flexibility in team composition as the needs of NE evolve. Program Direction also includes the Other Related Expenses subprogram, which provides NE's directed funding contribution to the Department's Working Capital Fund (WCF). The WCF supports specific Departmental services and activities that are shared across DOE including: employee health and testing services, and consolidated training and recruitment initiatives; all established in previous fiscal years and supported in FY 2026.

In addition to appropriated funds, NE manages approximately $450 million annually from other activities such as: reimbursable funding from the National Aeronautics and Space Administration (NASA) and the Department of Homeland Security (DHS).

The FY 2026 Request will allow the Office of Nuclear Energy to support its mission, address succession planning for critical technical positions, as well as support for the International Nuclear Energy Cooperation program focused on market access.

Highlights of the FY 2026 Budget Request

NE reflects a reduction in the workforce to support the Department's reorganization efforts and the Administration's goals and priorities. NE plans on achieving a staffing level of 251.8 in FY 2026. Program Direction provides costs associated with federal workforce staffing to include salaries, benefits, travel, training, and other related expenses. Program Direction funds also provide for costs associated with contractor services managed under the direction of the federal workforce.

Program Direction
Funding ($K)

	FY 2024 Enacted	FY 2025 Enacted	FY 2026 Request
Salaries and Benefits	30,069	31,920	31,501
Travel	1,462	1,585	2,032
Support Services	7,548	6,033	6,033
Other Related Expenses	8,272	6,711	7,319
Total, Washington Headquarters	**47,351**	**46,249**	**45,975**
Salaries and Benefits	1,795	1,556	1,556
Travel	-	-	-
Support Services	-	-	-
Other Related Expenses	85	115	115
Total, Nevada Field Office	**1,880**	**1,671**	**1,671**
Salaries and Benefits	27,698	29,135	28,444
Travel	547	200	200
Support Services	4,544	4,085	4,085
Other Related Expenses	4,200	5,715	5,715
Total, Idaho Operations Office	**36,989**	**39,135**	**38,444**
Salaries and Benefits	59,562	62,611	61,501
Travel	2,009	1,785	2,232
Support Services	12,092	10,118	10,118
Other Related Expenses	13,337	12,486	13,149
International Nuclear Energy Cooperation	3,000	3,000	1,000
Total, Program Direction	**90,000**	**90,000**	**88,000**
Federal FTEs	**277**	**294**	**251.8**
Technical Support	2,419	2,024	2,024
Management Support	9,673	8,094	8,094
Total, Support Services	**12,092**	**10,118**	**10,118**
Working Capital Fund	7,815	7,815	7,815
Rent, Utilities, and Facilities	1,273	1,273	1,273
Training	209	209	209
Other Services	4,040	3,189	3,852
Total, Other Related Expenses	**13,337**	**12,486**	**13,149**

Program Direction
Activities and Explanation of Changes
($K)

FY 2025 Enacted	FY 2026 Request	Explanation of Changes FY 2026 Request vs FY 2025 Enacted
Program Direction		
$90,000	**$88,000**	**-$2,000**
Salaries and Benefits		
$62,611	*$61,501*	*-$1,110*
Provides salaries and benefits for 291 FTEs.	Provides salaries and benefits for 251.8 FTEs.	This decrease of 39.2 FTEs reflects the reorganization efforts for the Department of Energy.
Travel		
$1,785	*$2,232*	*+$447*
Provides for travel by the federal staff including any necessary permanent change of station (PCS) costs.	Provides for travel by the federal staff including any necessary PCS costs.	This increase is due to the estimated costs to support activities such as PCS and other travel requirements.
Support Services		
$10,118	*$10,118*	*$-*
Provides for technical and administrative support services for the NE federal staff.	Provides for technical and administrative support services for the NE federal staff.	This funding continues to provide technical and administrative support services for NE federal staff.
Other Related Expenses		
$12,486	*$13,149*	*+$663*
Provides for NE's share of goods and services procured through the Department's Working Capital Fund (WCF); rents and utilities associated with the Idaho Operations Office; federal training expenses; and other miscellaneous expenses.	Provides for NE's share of goods and services procured through the Department's Working Capital Fund (WCF); rents and utilities associated with the Idaho Operations Office; federal training expenses; and other miscellaneous expenses.	This increase supports WCF, EITS, and general training costs associated with Federal workforce expenses.
International Nuclear Energy Cooperation		
$3,000	*$1,000*	*-$2,000*
Provides for NE's International Nuclear Energy Cooperation program	Provides funding in support of NE's International Nuclear Energy Cooperation program focused on market access.	Reflects a reduction of funding to focus on market access.